


The Art of
Polychromatic & Decorative
Turning

THE GETTY CENTER LIBRARY



*Why ask for the moon
When we have the stars?*

pic



Digitized by the Internet Archive
in 2018 with funding from
Getty Research Institute





The Art of Polychromatic & Decorative Turning

A Practical Manual for the Professional
and Amateur Turner

BY

GEORGE ASHDOWN AUDSLEY, LL.D.

ARCHITECT

AUTHOR OF "THE ORNAMENTAL ARTS OF JAPAN," "THE PRACTICAL DECORATOR," ETC.

AND

BERTHOLD AUDSLEY, ARCHITECT

ILLUSTRATED WITH TWENTY-ONE PLATES

BOSTON

SMALL, MAYNARD AND COMPANY

PUBLISHERS

1916

PREFACE

NO apology is necessary for the production of the present manual, devoted as it is to the full description of the practically new and certainly the most beautiful branch of the wood-turner's art.

We trust the subject will be found written and illustrated in a manner calculated to attract and instruct all, and especially amateurs, who take an interest in the fascinating art of ornamental turning.

We have endeavoured to make every step in the processes described perfectly clear to the reader, and we think that the numerous illustrations will be found of practical and suggestive value.

G. A. A. AND B. A.

CONTENTS

CHAP.	PAGE
I. INTRODUCTORY	3
II. COLOURED WOODS SUITABLE FOR DECORATIVE TURNING	17
III. DECORATION BY THE PROCESS OF STUDDING . .	33
IV. DECORATION BY THE PROCESS OF LAMINATION .	53
V. DECORATION BY THE PROCESS OF GEOMETRICAL INLAYING	77
VI. THE PRACTICAL APPLICATION OF POLYCHROMATIC AND DECORATIVE TURNING	101

LIST OF ILLUSTRATIONS

PLATES

- I. AND II.—ILLUSTRATING THE PROCESS OF STUDDING
- III., IV. AND V.—ILLUSTRATING THE PROCESS OF LAMINATION
- VI. TO XV. AND XXI.—ILLUSTRATING THE PROCESS OF GEOMETRICAL INLAYING
- XVI. TO XX.—ILLUSTRATING THE PRACTICAL APPLICATION OF THE SEVERAL PROCESSES DESCRIBED IN THE MANUAL

ILLUSTRATIONS IN TEXT

	PAGE
A ROD OF TURNED STUDS, AND TEMPLATE	41
SECTION OF A LAMINATED CYLINDER SHOWING CONSTRUCTION	71
ILLUSTRATION OF A CYLINDER LONGITUDINALLY LAMINATED	73
DIAGRAMS SHOWING THE CONSTRUCTION OF AN INLAID MEDALLION	85

CHAPTER I
INTRODUCTORY

THE ART OF POLYCHROMATIC AND DECORATIVE TURNING

CHAPTER I

INTRODUCTORY

NOTWITHSTANDING the great attention that has been paid to the art of turning, both by skilled professional and amateur lathe-men; notwithstanding the immense amount of ingenuity and patience that has been expended by those throughout the country who have made the turning of wood and ivory their favourite hobby; and notwithstanding the truly ingenious and marvellously accurate automatic appliances and accessories connected with the lathe, which have long been at the service of the turner who is fortunate enough to be able to acquire them—costly as they invariably are,—and the mass of elaborate work that has been the product of them, there still remains a fertile and practically unworked field for the essays both of the professional and of the amateur turner endowed with ordinary manipulatory skill, and (what is of equal importance)

artistic taste and a keen appreciation of the harmonies of colour, and their values in a decorative direction.

That the highly ornamental and decorative turnery, to the practical description and illustration of which the present manual is devoted, seems to be either unknown or totally neglected by even the most expert and enthusiastic turners of this country, was forcibly pressed on our notice while surveying the Exhibition held by the Worshipful Company of Turners in the Mansion House, London, in October, 1910. Neither in this nor in any other exhibition of the turner's art that has come under our notice, has there been a single specimen of the class of artistic and decorative turning which we have recently had the privilege of bringing into public notice—apparently for the first time in the history of turning—in the pages of the *English Mechanic and World of Science*; and which we have the opportunity of again doing, in a more extended and much more fully illustrated manner, in this treatise.

In the Exhibition above alluded to there were many admirable specimens of ordinary plain turning, and a few ambitious pieces, showing very accurate automatic turning and expert manipulation of the turning-tools; but each of these was executed in a single wood only and that of a somewhat sombre colour, and, accordingly, could lay but little, if any,

claim to be effective from a decorative-art point of view. We did not observe a single exhibit in which even two woods of contrasting colours were associated. Of purely mechanical turning there were a few very elaborate specimens—chiefly, as usual, in ivory—showing the great excellence of the high-class lathe of to-day, with its wonderful array of complicated chucks and automatic cutting tools.

As we have substantially said elsewhere,¹ when one examines the many complex designs or patterns produced through the agency of the several ingenious chucks—the “Geometric,” the “Eccentric,” the “Oval,” the “Compound Eccentric and Oval,” &c.,—with or without the “Rose Engine,” one cannot help marvelling at the perfection to which the mechanician has brought such lathe-accessories, while the labour of the operator of these and the attendant automatic tools is practically overlooked: here it is the *lathe* with the man, not the *man* with the lathe. Other objects, usually of ivory, due in their formation and enrichment to different chucks, and revolving cutters, held in the slide-rest, and actuated by the overhead motion, are usually of the flimsiest and most inartistic forms. These may properly be classed as curiosities of the lathe, of no real practical value, which, from their liability to be injured and their certainty to accumulate dust, require to

¹ *English Mechanic*, February 10, 1911.

be kept under glass shades. We do not desire to unduly disparage such accurate and ingenious mechanical work, although it does not appeal to such artistic sense as we possess, but we maintain that there is a wider and far more interesting style of work for the *man and the lathe*, which has yet to be fully developed by the artistic and skilful turner. We feel guaranteed, from practical experience, in asserting that the class of ornamental and decorative turning alluded to is the most artistic, beautiful, and useful of all the more elaborate products of the wood-lathe. However elaborate and perfect in detail and execution a piece of turned work in ivory or any single wood may be, it cannot fail to be more or less ineffective from a decorative-art point of view; in fact, the more elaborate and minute its surface details are, the less will it commend itself, save perhaps as a proof of the excellence of the purely mechanical movements and tools employed in its execution.

There is one highly favourable condition connected with the production of the class of ornamental work treated of in the present manual, namely, that it does not in any case call for the employment of an expensive, high-class lathe, with its complex mechanical accessories already mentioned: on the contrary, very beautiful and highly decorative work, such as is illustrated in our plates, can be readily executed on the

simplest lathe used for wood-turning, supplemented by a few keen-cutting brace-bits.¹ It goes without saying, however, that the possessors of more completely equipped lathes enjoy a great advantage over their less favoured brothers in the art; for while those who may be the possessors of simple lathes will have to be content to work within somewhat circumscribed limits—at least in certain processes,—and will have to depend very largely on accuracy of eye and dexterity of hand in the production of truly artistic works, the favoured possessors of expensive lathes, furnished with all the modern dividing and mechanical cutting appliances, have, it must be admitted, a practically boundless field for their labours, in which accuracy of eye and great manual

¹ In support of this statement, it may be mentioned that the late William James Audsley, who may be said to have been the father of this style of turning in perhaps its highest decorative development, executed all his elaborate work on a very simple and inexpensive lathe, with the ordinary hand-rest and turning-tools, and the common brace and centre-bits. Among his works are a set of large candlesticks, of a Gothic form, executed in about half-a-dozen woods of different contrasting colours, inlaid, studded with ivory, and enriched with precious stones. Also a series of about two dozen large circular medallions of elaborate geometrical inlaid woods and ivory, each containing in its centre a large precious stone—carbuncles, amethysts, and topazes, cut *en cabuchon*, being used—which decorated the oak case-work of a small chamber organ in the possession of the late James Lord Bowes, of Liverpool. Precious stones, of course, do not in any sense belong to this class of turnery, but the fact that in these instances they were deemed appropriate additions, surely goes far to prove the beauty of the turned work which formed their artistic settings.

dexterity are but little called into play. But there are other senses or acquirements which are as necessary to success in the art now under consideration as are accuracy of eye and dexterity of hand, and these cannot be denied the possessor of the humblest lathe, nor can they be bought along with the most expensive lathe procurable to-day, should the purchaser not possess them by nature or cultivation. We allude, in the remarks just made, to the sense of form and beauty, absolutely essential in the preparation of satisfactory designs; and the sense of colour-harmony, equally essential in the artistic arrangements or combinations of the coloured woods which form the palette of the turner. It cannot for a moment be questioned that an artistic appreciation of form, suitable for any article contemplated, and a true sense of the value of colour in its harmonies of analogy and contrast, are all-important factors in the successful production of works of ornamental and decorative art, and especially so in the case of such works produced through the more or less mechanical operations of the turning-lathe.

Second only in importance to the possession of a good steady-working lathe, and the ordinary turning and boring tools already alluded to, is the acquisition of a suitable selection of coloured woods; for without the latter the decorative turner will find it difficult to produce works of much variety in their

colouring, or artistic excellence in colour-combinations. It is, fortunately, not absolutely necessary that he should have a great number of the different woods at his disposal; but it is almost imperative that he should have a collection presenting the most vividly contrasting colours possible, ranging from the soft white of holly, through the available tints of yellow, orange, red, purple, green, and brown, to the intense black of the choicest Mauritius ebony. Woods affording these tints, of a more or less pronounced character, number, according to the list given in the following chapter, thirty-six. To these may be added African black-wood, iron-wood, *lignum vitæ*, log-wood, Brazil-wood, olive-wood, partridge-wood, pheasant-wood, yew-tree, and yellow-wood. Neither these nor all of the woods described in the following chapter are by any means necessary in the hands of the most ambitious turner, nor are they required for the execution of the most elaborate work that could well be devised. It will be seldom that more than six different woods will be called for in the richest work: in this matter, good taste should always dictate the proper reserve. Ivory, we may remark, should, on account of its intense whiteness, be used very sparingly, and then only for the production of sharp effects in colour combinations: this condition is a gain, because of its great cost in pieces of large size.

Apart from the ordinary processes employed in plain turning, in which only one kind of wood is used, the processes which have to be resorted to in the production of works of ornamental and decorative turning are properly grouped under three practically distinct treatments, all of which may be used separately, or in any desirable combination, according to the design and character of the article in the construction and decoration of which they are to be employed.

The first, and at the same time the simplest and easiest treatment or mode of decorative turning is that which may be correctly designated *Studding*: this is appropriately employed for the ornamentation or effective enrichment of flat bands and rings, small surfaces of suitable form, and, but more rarely, certain salient members of important mouldings. As is more fully explained in Chapter III., studding may be simple or compound, or, in other words, plain or pattern. It is simple or plain when it consists of a succession of studs, of the same size, arranged in a direct line on a band, ring, or moulding, or singly on any surface. It is the latter when the studs are of the same or different sizes, so arranged on any surface as to form patterns or devices. Studding may also be flat (that is, inserted flush) or raised; and it should invariably be of a colour contrasting with that of the ground on which it appears: otherwise

it is very ineffective. Perhaps, on this account, ivory may find in this form of decoration its most legitimate introduction. Studding can be used alone or in association with either of the other treatments.

The second treatment or mode of decorative turning is that which we have designated *Lamination*: this is variously employed in the production of colour-effects in mouldings and plain cylindrical and other suitable surfaces, and, occasionally, for the effective rendering of special ornamental features. In this mode of decoration, the harmonious arrangement of colour, both in contrast and analogy, is of the greatest importance; and in its practice there may be said to be practically no limit to the exercise of the taste and ingenuity of the turner in the selection and combination of the coloured woods at his disposal. Even the arrangements of only three or four properly-contrasted woods need never fail of producing beautiful decorative effects.

Though the few processes employed in this mode of decorative turning are not so easy as those necessary in studding, they present no difficulties to even the amateur who is fairly skilled in the use of the lathe. All the processes are simple, only calling for accuracy of manipulation, ordinary care, and patience. No appliances are necessary beyond those furnished by the simplest form of wood-lathe, and such tools as are commonly found on the bench, and a simple

hand-screw for glueing-up. Notwithstanding these facts, lamination, when properly executed, and with harmonious colouring, imparts to the plainest cylindrical surface a very beautiful and highly decorative character. All details respecting the process of lamination, assisted by illustrations, are given in Chapter IV.

The third treatment or mode of decorative turning may be designated *Geometrical Inlaying*, being based, in all its practical forms or designs, on combinations of the circle and portions of the circle disposed geometrically: in these combinations, harmonious colouring has to play an important part. This mode of decoration is best and most legitimately displayed in the shape of circular plaques or medallions, containing the inlaid devices executed in choice woods of harmonious colours, such devices being, in every one of their constituent parts, products of the lathe. The medallions so produced, when inlaid flush or very slightly in relief, form beautiful and refined ornaments or decorations for various articles of household furniture, or other objects produced in the lathe; and the tasteful and ingenious turner can by their means elevate even the simplest and plainest of such articles into veritable works of decorative art. This subject is treated very fully in Chapter VI. Although the processes of geometrical inlaying are somewhat more difficult and more tedious than those of the two

modes of decorative turning already described, and although higher designing powers, combined with accurate draughtsmanship, are called into practice in the preparation of the geometrical designs, the results fully repay all the thought and labour expended. A full dissertation on this most interesting method of decorative turning, accompanied by an ample series of illustrations, will be found in Chapter V. We direct the reader's attention specially to Plate XXI., in which are given photographic engravings—by the three-colour process—of two medallions, actually executed, in the lathe, by an accomplished amateur.

CHAPTER II

COLOURED WOODS SUITABLE FOR
DECORATIVE TURNING

CHAPTER II

COLOURED WOODS SUITABLE FOR DECORATIVE TURNING

THE present chapter is devoted to the names and properties of the coloured woods suitable for the use of the turner, and for the production of the class of artistic turnery described in the present manual. As the painter, before painting a picture, "sets his palette" with all the colours necessary for his work, so must the turner set his palette, so to speak, with the selection of coloured woods necessary for the effective rendering of the decorative pictures he desires to paint in the lathe. The following classified list will assist him in developing his colour-schemes according to his requirements.

BLACK WOOD

Ebony.—This is practically the only really black wood suitable for the art of the turner, and as it is easily procurable of good quality and of sufficient size for all ordinary purposes, it may be considered one of the most valuable and indispensable woods for the class of turnery now under consideration. There are

different qualities of ebony in the market, but the Mauritius ebony, which is the blackest in colour and the closest and finest in grain, should alone be used. Even this kind should be carefully selected; all pieces containing grey streaks or imperfections of any sort should be rejected. Fine black ebony is most effective in every branch of decorative turning, as will be realised on reference to the illustrations given in this manual.

PURPLISH WOODS

Rose-wood.—Of this well-known wood only the closest-grained kind should be selected by the turner, while its colour should be of an intense purple, closely approaching black. This wood is chiefly valuable for large surfaces in which a somewhat softer effect is desired than can be furnished by black ebony. Rose-wood can, however, be used instead of ebony in many details; it also forms a very pleasing ground for bright inlays.

Purple-wood or *Amaranthus*.—A Brazilian wood which has the peculiarity of rapidly changing its original colour. When freshly cut or turned it has a dark gray tint, but this ineffective colour changes by exposure to a deep purple. The turner who uses this wood, on account of this purple colour, should test it thoroughly by exposure to air and light, so as to satisfy himself as to its conduct. If the result is satisfactory,

and the wood assumes a somewhat pronounced purple tint, the turner will find it very valuable as an effective contrast to the brighter yellow woods.

King-wood or *Violet-wood*.—This is another wood imported from Brazil. It is, when of the best quality, one of the most beautiful of the coloured woods. It is richly streaked with violet markings of different depths of tone, and is a most desirable wood in the hands of the decorative turner. When used for inlaying, the direction of its markings should receive due consideration. Choice pieces cannot be obtained much above two inches in diameter.

REDDISH WOODS

Ruby-wood or *Red Saunders*.—A valuable red wood grown in India. It is hard and heavy, but works well in the lathe. As it varies somewhat in colour, the brightest and most evenly toned pieces should be selected by the decorative turner. It is one of the dye-woods.

Brazil or *Pernambuco wood*.—A dark red wood which can be effectively combined with other and lighter-coloured woods. Care must be taken to select perfect pieces only; and the turner must bear in mind that whatever its colour may be when freshly turned, it will become considerably darker on exposure to the air. This is also a dye-wood.

Thuja or *Thuya*.—A bright red wood inclining to orange, fine turned specimens of which can be seen in the collection of foreign woods in the Museum at Kew Gardens. The wood is closely figured, but not of a nature to render it unsuitable for use in small surfaces. When introduced in geometrical inlaying, small pieces will be commonly required, and these should be carefully selected of as uniform a colour as possible. It is an invaluable wood to the decorative turner on account of its rich colour, and, fortunately, it can be readily obtained from the dealers in foreign woods.

Padouk.—An Indian wood of a rich red colour, and commonly presenting several varieties of tone in a piece of reasonable size. Like *thuja*, it is invaluable to the decorative turner, furnishing one of the richest reds at his command. In some respects it is more useful than ruby-wood or *thuja*. The light-toned *padouk* is very useful in soft combinations, and in harmonies of analogy, associated with the darker red woods, or with its own darker tones. The turner should, accordingly, carefully select a plank of this wood presenting as many varieties of tone as possible. *Padouk* turns admirably, but demands care in boring, as it is liable to chip. It repays all the care bestowed on its manipulation. It receives a high polish. It can easily be obtained of any desirable dimensions.

Braziletto.—A wood of a ruddy colour, inclining toward orange, in which well-marked streaks frequently appear. It is imported from Jamaica, in pieces which reach about seven inches in diameter. This wood turns well, and its colour is effective when associated with the lighter tints of the yellow woods. It is also a dye-wood.

Tulip-wood.—This is a valuable wood in the hands of the decorative turner. Its colour is a light and somewhat bright red with darker red streaks, having a rich appearance when freshly turned, but, unfortunately, it loses some of its brightness when exposed to air and light. When immediately French polished after it is finished in the lathe it does not fade so readily; but, nevertheless, the fact that it does change should be recognised by the turner when forming his colour-schemes.

Cam-wood.—This is another valuable wood in decorative turnery, being singularly fine and close in its grain. When freshly turned it is of an orange-red colour, but this desirable tint is not permanent, changing by exposure to a red approaching the brown scale. As in the case of tulip-wood, this fact should be borne in mind by the turner. Cam-wood is the finest of all the red dye-woods.

Bar-wood.—An African wood of a dark red colour, which turns well, and is valuable in low-toned colour-schemes. Pieces for the lathe, end-grain,

are commonly under three inches in diameter, but long-grain pieces can be obtained of any useful size. It is also a dye-wood.

Beef-wood.—A fine and useful wood, imported from New South Wales, usually in round logs reaching up to about twelve inches in diameter. Its colour is that of rich red Spanish mahogany, with dark red markings distributed closely throughout it, producing, in the finer specimens, a very pleasing effect. As it can be obtained in end-grain pieces of any desirable size, it becomes a useful wood for large surfaces which are to receive richly-coloured designs executed in lighter-tinted woods.

Rata.—A New Zealand wood, of a dark red colour, very close-grained, and heavy. It can be obtained of any desirable size, and is trustworthy in every respect.

Rosetta-wood.—This is wood of an orange-red colour having darker markings. When freshly turned its colour is singularly vivid; but, unfortunately, the lighter tints darken somewhat on long exposure. The wood is close-grained and hard, and, accordingly, turns well.

Red cedar (*Juniperus virginiana*).—This wood is commonly known as “pencil cedar.” Its pale and very subdued reddish hue renders it useful in certain combinations of more richly-coloured woods. It should be used in flush-work only, where it is

little liable to be injured, its great softness rendering this disposition desirable. The richest, brightest, and most uniformly coloured pieces should be selected by the turner. It should not be used end-grain.

Spanish mahogany.—The richest coloured specimens of this wood may be found useful by the turner as a background for bright combinations, but it is not so good as beef-wood for decorative purposes.

GREENISH WOODS

Calemborg.—This wood is of an olive-green colour, in which darker tones appear. Choice pieces, having a clear and uniform colour, are much to be desired by the decorative turner, especially for works in which low tones and subdued contrasts with warm-tinted woods are preferred. From the similarity of its grain to that of the ordinary yellow sandal-wood, and being also scented, it has been named green sandal-wood.

Green ebony.—This is a West Indian wood, of great use to the turner, being hard, durable, and capable of receiving a high polish. On account of its dull green colour, which has been compared to that of a green fig just approaching maturity, this wood is valuable for grounds to receive inlays of light contrasting and brightly coloured woods. Choice pieces of uniform tint should alone be used in good work.

Laburnum.—This well-known wood has been too much neglected by the turner, probably because the value of its peculiar colour and general appearance has not been realised in the common class of turnery hitherto practised. The best laburnum is grown in Great Britain, the Alpine variety yielding a blackish wood. The British laburnum is of a greenish-brown colour, being variously marked and figured in good specimens. It can be procured in sizes sufficient for all ornamental purposes, and should certainly be included in the palette of the decorative turner.

YELLOWISH WOODS

Box-wood.—Of all the woods approaching yellow in colour, box-wood is the most valuable to the turner; in fact, it is, like ebony, indispensable in decorative turnery. It forms, on the one hand, an effective medium of demarcation between darker-coloured woods; while, on the other hand, it forms an admirable ground for the display of richly-coloured designs, and furnishes an element of importance in designs executed on dark grounds. These facts will be readily realised on studying the designs illustrated in the present manual. Only the finest and lightest-coloured wood, free from discolorations of any kind, should be selected for grounds and for general use; but for some special colour combinations,

the deepest yellow box-wood will, in all probability, be preferred by the artist in decorative turnery. This variety is only to be found in the finest wood imported from Turkey.

Fustic.—This is a valuable decorative wood of a yellow colour, inclining to the green scale. It can be procured in pieces sufficiently large for any purpose in decorative turnery, and even up to eight inches in diameter. It is effective in all the offices pointed out in the above remarks on box-wood, while it is more effective in large surfaces than that wood. It is largely used in dyeing.

Satin-wood.—The satin-wood used by the turner should be that imported from St. Domingo; and of this, the brightest yellow and most lustrous pieces should be selected. Having a beautiful figure, it is highly suitable for the portions of any work which present sufficiently large surfaces to display its peculiar richness. These surfaces are admirable for the reception of inlaid designs executed in boldly-contrasting and deeply-coloured woods. On the other hand it can be effectively used in small pieces in the formation of designs.

Canary-wood or *Amarillo*.—This is a South American wood, close-grained, and of a deep yellow colour, inclining to orange in the finer specimens. It is a most valuable wood in the hands of the decorative turner, producing fine contrasts of colour

when associated with ebony, rose-wood, and other dark woods, and pleasing harmonies of analogy in conjunction with the rich brown woods.

Mulberry (*Morus indica*).—An Indian wood of a yellow colour, close-grained, and very tough. It is a desirable wood in decorative turnery, although not indispensable.

Lance-wood.—This well-known wood is of a pale yellowish cream colour, lighter in tint than box-wood. It can be used instead of box-wood in vivid contrasts of colour.

Sandal-wood.—This wood, so largely used for various ornamental purposes, is a useful material in decorative turnery, especially when a subdued yellow colour, inclining to a tawny-brown tint, is desirable in low-toned harmonies, or for quiet grounds to receive richly-coloured devices. The best sandal-wood for turnery comes from Malabar, and can be procured of any size likely to be called for by the decorative turner.

BROWNISH WOODS

Cangica-wood or *Angica-wood*.—A Brazilian wood of a yellowish-brown colour. It is highly suitable for turnery, and for this purpose pieces as uniform in tint and as plain in figure as possible should be selected.

Coromandel or *Calamander*.—The best quality of this wood is grown in Ceylon. It is a slightly figured wood, its ground-colour being of a warm brown colour through which are blackish markings. It is intensely hard, but turns well. It has been classed as a variety of ebony. It can usually be obtained of the largest size likely to be called for in decorative turnery.

Princes-wood.—This wood is imported from Jamaica in logs up to about seven inches in diameter. It is a pale yellowish-brown, veined wood, very suitable for decorative turnery.

Cocus or *Cocoa-wood*.—This West Indian wood is very well known to the professional turner. It is suitable for the most elaborate class of ornamental turnery, being hard and singularly close in the grain. It would be very valuable in decorative work if it retained its light yellowish-brown colour, streaked with darker brown, when first worked, but, unfortunately, it changes to a very deep brown on exposure.

Snake-wood.—This beautiful and somewhat scarce wood is of a warm hazel colour, through which are distributed numerous black markings, which, from their slight resemblance to the dark scales on the skin of a snake, have given the name to the wood. It can be used with considerable effect by the decorative turner, if artistically contrasted and properly disposed with respect to its markings. It can be obtained only in pieces of small diameters.

Amboyne or *Kiabooka-wood*.—This wood is imported from Singapore. It is a beautiful wood of a colour ranging from orange-brown to a reddish-brown, covered with small curls and knot-like markings; it is evidently of the nature of a burr. In the turner's hands it cannot be said to be effective, unless used for plain and somewhat large surfaces where its figure can be seen to advantage. It forms, however, a good ground for bright inlays, or studding of ivory, holly, or box-wood.

Bullet-wood.—The finer wood that bears this name, which is stated to come from Berbice, is of a uniform, hazel-brown colour, and is very close-grained and hard. It is in every way suitable for ornamental turnery, and to some extent in decorative work. This finer quality is scarce, and not commonly to be found in the market. The bullet-wood which comes from the Virgin Isles, West Indies, is not so desirable, being of a weak greenish-brown colour.

Zebra-wood.—This is a beautiful wood of an orange-brown colour, with dark brown stripes commonly approaching straight lines. The variety to be selected by the turner is the Brazilian, shipped from Rio Janeiro. Like all richly marked or figured woods, it is most suitable for surfaces of sufficient size to allow its character to be well seen. When used in decorative inlays, very choice pieces should be selected and matched, and their stripes should be

symmetrically arranged in directions so as to assist the design in which they are introduced.

WHITE WOOD

Holly.—This is the only wood that approaches a pure white that is of value to the decorative turner. It is a remarkably clean, close-grained, and tough wood, and turns admirably. The turner must be careful to use only pieces that have been properly cured, seasoned, and dried. When it has been so prepared, it presents a clear and uniform white appearance, and can be safely used. To the decorative turner, holly is of the highest value, coming next to ivory in effect, while, in many combinations of colour, it is superior to it on account of its softness of tone. It is unfortunate, however, that it is practically impossible to obtain this invaluable wood (from any dealer in hard-woods), properly cured and seasoned, of a greater thickness than a quarter of an inch. This fact limits its use to a considerable extent, except in flat work or in the process of geometrical inlaying. In lamination it will seldom be required above the thickness stated.

CHAPTER III
DECORATION BY THE PROCESS OF
STUDDING

CHAPTER III

DECORATION BY THE PROCESS OF STUDDING

THE first and simplest mode of decoration by the use of turned work, as mentioned in the preceding chapter, is that which embraces all the varieties of plain- and pattern-studding. Simple though this mode of decoration may be, and calling, as it does, for comparatively little skill in its practice, it is, when properly executed, extremely effective, especially when woods of boldly-contrasting colours are used, with or without the employment of ivory. This latter material lends itself admirably to this process of studding, not only because it can be generally used in small and inexpensive pieces, but from the fact that it furnishes the most pronounced and vivid contrast possible to grounds of ebony and the other dark woods. An illustration of the simplest form of ivory studding on an ebony ground or band is given at B in Plate I. At A, in the same plate, an equally simple treatment is shown, in which the studding is represented to be of ebony on a ground of holly, which produces the most pronounced contrast possible in wood at the command of the turner. The art of

studding simply consists of inserting into a flat or any suitably curved surface of some variety of coloured wood, first brought to the desired form in the lathe, a series of circular studs of some other wood of a strongly contrasting colour, as mentioned above, or of an analogous tint, when a soft and subdued effect is desired ; the studs being so arranged or disposed as to impart to that surface a well-marked decorative character—a character that cannot be produced in any one description of wood, by any process of simple turning, or by the resort to automatic tools operating on such a surface alone.

Beyond extreme accuracy in setting out the centres of the holes for the reception of the studs, and ordinary skill in the use of the lathe and the few necessary hand-tools, little is called for in the workman but good judgment and taste in the selection of the material for the studs, with regard to that of the ground into which they are to be inserted, so as to produce the artistic effect aimed at.

The only tools absolutely necessary in addition to the usual wood-lathe accessories and hand-turning tools, are a good steady-working brace and a set of very sharp and clean-cutting bits—preferably, for this class of work, those known as the “Jennings’ Patent Bits,” which are of the screw-pointed, double-cutting, twist form. Of these only the smaller sizes are likely to be required, and the shorter make should be

preferred. Ordinary centre-bits may be used, but these require to be kept in the sharpest and most perfect condition. It is desirable to prepare them for work requiring so great accuracy by reducing the size and altering the edges of their centre-points, so as to prevent their working in any direction from the centres originally set out. Before using either form of bit, the centre holes should in all cases be accurately and deeply pricked with a sharp-pointed awl; the fine holes so made will guide the bits during the process of boring the holes for the studs. Doubtless the good workman will decide all such matters to his own satisfaction, as experience is the best teacher and guide. In all probability, the possessors of high-class lathes, fitted with dividing-plate, slide-rest, and overhead-motion, will reject such every-day tools as the brace and bits, and have recourse to their automatic revolving cutters and drills, therewith producing more accurate and, perhaps, cleaner work. But we have known work executed without these exact mechanical and automatic appliances as perfect in every respect as the most exacting artist could desire. In our opinion there is a charm about work that bears the unmistakable stamp of direct and expert hand execution, which is necessarily absent in purely mechanical productions. As we have said elsewhere, "the element of difficulty, and the demand for accuracy of eye and dexterity of hand, have, and always should have, great charms for

the true artist." The necessity for accuracy in the designing and execution of both plain- and pattern-studding will be evident to every one interested in woodwork who examines the plates devoted to the illustration of this mode of decorative turning, and those in which it is shown associated with, and subordinate to, the more elaborate methods of decoration.

In the foregoing remarks two styles of studding have been mentioned, and, accordingly, before proceeding further, it is desirable that what is signified by the terms *plain-studding* and *pattern-studding* should be clearly stated. Plain-studding comprises all dispositions of single studs which do not in themselves form ornamental designs or patterns. The most effective disposition is in a single row, at regular intervals, such as appears in diagrams A, B, C, and D, in Plate I., the practical application of which is well illustrated in the design for a tall candlestick shown in Plate V., in which rows of ivory studs ornament the lowest member of the base and the four ebony bands in the shaft, below and above the central knop. The other styles of studding also illustrated in this plate will be alluded to further on. Plain-studding is again shown applied to cylindrical bands in diagrams B and C in Plate III. As applied, in a circular fashion, in flat work, effective examples are furnished by the medallion illustrated in Plate XIII., and by the

compound medallions in Plate X. Plain-studding, inserted in grounds surrounding elaborate designs, is illustrated in the medallions represented in Plate IX.

Plain-studding may assume a simple form, the studs being of a single material—wood or ivory—as represented in diagrams A and B, in Plate I., or they may be rendered ornamental in themselves by being turned of different materials, such as wood and ivory, or two woods of contrasting colours, after the fashion represented in diagrams C and D in the same plate. In the former the studs are shown to be of ivory with ebony centres, while those in the latter diagram are shown to be of ebony with ivory centres; the colours of the grounds dictating the contrasting treatment of the studs.

The term *pattern-studding* practically explains itself, signifying any arrangement of studs—preferably plain—which produces either an *open* or *close* pattern or ornamental device. Open pattern-studding is the simpler and easier in manipulation of the two classes named, because the studs employed in it retain their ordinary circular form, and are inserted invariably in detached positions in the ground, so as to produce the open patterns required. Examples of this class of studding are illustrated in diagrams B, C, and D in Plate II.

The term *close-studding* is conveniently used to signify the combination of studs, properly of differently

coloured materials, which are so closely associated as to touch or cut into each other in the formation of simple ornamental devices, such as are represented in diagrams E and F in Plate I., and A in Plate II. An example of the use of such studding for the decoration of an otherwise plain surface or ground is furnished by the conical base of the candlestick illustrated in Plate V.

In the formation of the patterns and devices above alluded to, two classes of studs may be employed, namely, flat or flush, and raised. The former class is that most suitable for general use, being not only the easiest to execute, but in some respects the most effective. Raised studs are, however, desirable in certain designs, and in some salient positions, as, for instance, in the central knop of the candlestick in Plate V. All the diagrams in Plate II. show the introduction of raised studs in combination with flat ones. Of course such designs are not dependent on the introduction of the raised studs, for they can all be effectively executed in flush studding.

Before giving the desirable hints respecting the coloured woods most suitable for the effective rendering of the studding illustrated in Plates I. and II., we may outline the processes called for in the production of such studding.

Supposing a single row of studs is required upon a flat band, such as that which forms the lowest

member of the candlestick in Plate V., and that the band has been turned very closely to its required size, the next proceeding is to indicate the central line of the studding by slightly scratching it on the band as it revolves in the lathe, and, subsequently, accurately dividing the line into as many equal parts as there are to be studs. When the surface is parallel to the axis of the article, as in the case of the candlestick, the division of the scratched line may be most readily accomplished by placing around the band, and against the line, a narrow strip of paper and cutting through its overlapping ends, thereby obtaining the exact circumference of the band. The strip of paper can then be laid flat, and easily and accurately divided into the desired number of parts, and its edge marked with the same. The paper should again be coiled around the band, with its marked edge laid close to the scratch, and temporarily fixed in place with a little gum or paste at intervals, but so as to be easily removed. The divisions can now be correctly pricked on the scratch, indicating the centres of the holes that have to be bored for the reception of the studs. These simple directions are here given, because it is not a very easy matter to strike the divisions on the article direct, numerous trials, probably of a somewhat tedious character, being necessary, accompanied with numerous undesirable pricks on the band. Of course, if the lathe is furnished with a dividing-plate, the markings

for the centre of the holes can be made directly on the article, without any resort to division by hand. When the studding is to be executed on an inclined, concave, or convex member, the paper must be abandoned, and the dividing done directly on the same. In every case the centres so marked must, before the boring is commenced, be deeply pricked with the sharp-pointed awl already mentioned, for accuracy in the subsequent boring is absolutely necessary.

When the work has been successfully brought to this stage, the boring of the holes may be proceeded with, the most suitable bits being used according to the nature of the wood. The depth of the holes may vary, according to the size of the studs, from three-sixteenths to three-eighths of an inch. If the boring is to be done by means of the brace and bit, as it probably will be in nine cases out of ten, the article, on or off its chuck, must be temporarily removed from the lathe, and held in a favourable position either in the ordinary bench-jaws or some suitable screw-box. On the other hand, if the boring is to be done by a tool held in a slide-rest and driven by an overhead motion, the article will of necessity remain in the lathe, and subject to the proper adjustment of the dividing-plate. When bored, in either fashion, the article is ready to receive the studs.

The studs must be turned so as to fit accurately the holes bored for their reception. When small

and of a single kind of wood, or of ivory, they are most conveniently turned in a rod, and parted to about the proper length to fill the holes and to project very slightly from the surface of the article. The accompanying illustration, Fig. 1, shows the manner in which the studs may be most readily turned and parted. The rod should be first brought to a uniform diameter throughout, using a template bored by the proper bit, halved as shown at A, to determine the same. It should then be parted with



FIG 1.—A rod of turned studs, and template.

a small parting-tool, and each stud very slightly tapered, as indicated. The studs may be finally separated with a fine saw. When all the studs are turned and ready for insertion, they must be dipped in thin freshly-made glue, and gently hammered or pressed into their holes. After the glue has become dry, it is desirable that any portions of the studs which may project somewhat from the surface of the object should be cut away with a fine saw, or roughly filed down, so as to reduce the subsequent turning to a minimum, and to secure a perfect finish. Great care is required in this final operation to prevent injury to the studs, which are liable to be chipped.

In the execution of such open pattern-studding as is illustrated in diagrams B, C, and D in Plate II., proper means must be adopted to accurately mark upon the surface or ground to be studded the centres of the holes that have to be bored. These centres can, with care, be set out directly upon the ground by the aid of the ordinary drawing instruments; but with greater ease and certainty, as the ground is likely to be curved, by means of paper patterns. These patterns simply consist of accurate drawings of the arrangements of the studs, the centres for which are pricked through the paper. In using these it is only necessary to first determine the central point of the design on the ground, and drive a fine needle into it: then passing the needle through the centre of the middle stud, as drawn, press the pattern down in proper position on the ground, and accurately prick upon it the centres of the other studs forming the design. If a design is to be repeated, say in the manner indicated on the conical base of the candlestick illustrated in Plate V., it is only necessary to again and again adjust the pattern where required, in the same manner, and prick all the centres. The centres are then to be very accurately and deeply pricked with the pointed awl, the holes bored, and the studs glued in and finally turned down, as directed above for plain-studding.

In the execution of such close pattern-studding as is illustrated in diagrams E and F, in Plate I., and A, in Plate II., exactly the same process as that just outlined should be followed, save in the matter of boring. As in such patterns all the studs except the central one have to be partly cut away to admit of the insertion of the central stud, it is obvious that the holes for the outer studs must be bored, and the studs glued in and dressed off, either in the lathe or by the file, before the hole for the central stud can be bored, the bit employed cutting away the small portions of the outer studs necessary to admit of the insertion of the stud which completes the design. When the central stud, in each design, has been glued in and roughly dressed off, the entire studded portion must be returned to the lathe and the surface finally turned and finished, being polished in any desirable manner.

In executing raised studding, the processes above described have to be slightly altered. In the first place, the raised studs have to be completely finished in the lathe before they are applied, and, in the second place, all the flat studding must be executed, and the entire studded surface must be finally turned and polished, before the raised studs are glued in. The shape in which the studs should be turned so as to enter and slightly overlap the edges of their holes is clearly indicated in all the sections

given in Plate II. The projecting portions of the studs are shown hemispherical in all the designs; but any other form can, of course, be adopted as the taste of the turner may suggest. We may, however, remark that the hemispherical or simple convex form is the best and most effective one to use in all ordinary cases.

One other class of stud has to be described, namely, that in which two contrasting materials are used, preferably ebony and ivory, or ebony and holly. This class of studding is represented in diagrams C and D in Plate I. In forming such studs the inner portions can be turned in the manner illustrated in Fig. 1; but in completing the studs each one has to be chucked and turned separately, the hole for the reception of its inner portion being turned out, the portion glued in, and the stud brought to the proper size and condition for insertion in any object, just as in the case of the plain studs already described. Owing to the time and trouble involved in forming studs of this compound class, they are likely to be used sparingly, and only in very choice specimens of the art of the decorative turner.

In all the preceding remarks in the present chapter we have spoken of studding, in all its different forms or classes, as applied to surfaces turned in the lathe; but it must not be understood that such surfaces are the only fields for the artistic

display of plain- and pattern-studding. Both classes of studding are equally valuable when used for the decoration of flat surfaces, as may be readily realised on an examination of the plates in the present treatise devoted to the illustration of articles of furniture. It will also be realised that studding is an admirable attendant on other and more elaborate systems of decorative turning, on flat surfaces either produced in the lathe or on the planing bench.

We may conclude the present chapter with a few practical hints respecting the arrangements of coloured woods best suited for the effective execution of the several designs of plain- and pattern-studding illustrated in Plates I. and II.

Plate I.—Diagrams A and B show single rows of plain-studding in counterchanged contrast. In diagram A the ground is shown light and the studs black. In actual work the ground may be of such woods as box, satin-wood, maple, or even the more humble sycamore. The studs may be of ebony or rosewood when a very pronounced contrast is desired; or, when a less forcible contrast be aimed at, of some rich red wood as padouk, thuja, or ruby-wood. If a still softer contrast is preferred, the studs may be of tulip-wood or cangica-wood, or of still lighter-coloured woods if a harmony of analogy is desired. If the ground be flat, it may

be of bleached holly, which, as it can only be obtained up to a quarter of an inch in thickness, must be glued upon some other wood serving as a support. As holly is the whitest wood known, the greatest possible contrast is secured by studding it with ebony; but very pleasing contrasts are obtained by using any of the red woods.

Diagram B shows a treatment directly the reverse of the preceding. In actual work the ground may be of ebony or rosewood of the closest-grained and darkest kind, while the studs may be of ivory, or, if not larger than a quarter of an inch in diameter, of holly. If a softer effect be desired, the studs may be of boxwood or satin-wood. The ground may, on the other hand, be of some lighter and richer wood, such as purple-wood, king-wood, Brazil-wood, padouk, thuja, calemborg, or coromandel. These hints are given by way of leading suggestions; for when one bears in mind that there are, at the lowest computation, about thirteen woods of a reddish colour, seven of a yellowish colour, three of a greenish colour, eight of a brownish colour, and three of a purple colour—all of which are well suited for the use of the decorative turner—it is obvious that almost countless combinations are possible, while many of them, besides those already suggested, would be found very refined and pleasing.

Diagrams C and D show single rows of inlaid studs in counterchanged contrasts. In diagram C the ground is of a dark tint, representing some wood of a medium depth of colour, such as padouk, thuja, or calemborg, the studs to be of ivory with ebony inlays, or, if a less forcible contrast is desired, of boxwood with ebony or rosewood inlays. In diagram D the ground is of a lighter character, representing such a wood as laburnum, tulip-wood, or fustic, the studs to be of ebony inlaid with ivory or holly.

Diagram E shows a very simple form of close pattern-studding, with the addition of single detached studs. The ground, shown black, may be of ebony or rosewood; the outer studs of the trefoils to be of box or satin-wood, and the central studs of tulip-wood, princes-wood, or laburnum. The detached studs may be of any of the lighter woods just named. When less forcible contrasts are desired, the ground may be of green ebony or any of the rich red woods.

Diagram F gives a somewhat more elaborate design in close pattern-studding, in which the ground is light, representing boxwood, satin-wood, or maple; and the studding, for the most part black, representing ebony or rosewood, the centres of the quatrefoils to be of some rich red wood, such as padouk or thuja. This design can, of course, be executed

on a dark ground, the same system of colouring being followed as suggested above with relation to the design in diagram E.

Plate II.—Diagram A shows a simple design in close pattern-studding, with the introduction of raised studs. The ground is dark, indicating the use of some richly-coloured wood, but one not too dark to prevent the ebony studs which form the quatrefoils presenting a sufficient contrast. The raised central studs may be of boxwood, fustic, or laburnum. The same design can be successfully carried out on a lighter wood, such as satin-wood, tulip-wood, fustic, or laburnum; the quatrefoils being in rosewood or ebony, and the raised studs in ivory or light boxwood.

Diagram B shows a design in open pattern-studding, also with the introduction of raised studs, which in this case are of the same size as the flush studs. The ground represents ebony or rosewood, but woods of a richer character would be highly suitable, such as violet-wood or Brazil-wood. The studs may be of holly, boxwood, or satin-wood in all cases; the raised studs, however, can be formed of a different wood or of ivory, as taste may direct.

Diagram C furnishes another and simpler design in open pattern-studding which can be successfully executed on a ground of satin-wood, fustic, or laburnum, the outer studs being of ebony, and the

central raised studs of any wood contrasting well with the ground. For instance, if the ground be of satin-wood, the raised studs may be of dark padouk, and the flat studs of purple-wood or ebony. If the ground be laburnum of a good light-green colour, the flat studs may be of Brazil-wood or rich red padouk, while the raised studs may be of ebony or ivory.

Diagram D presents an effective arrangement of small, detached studs, flat and raised. Patterns of this class require considerable space and numerous studs for their execution ; and they are best suited for straight bands. They can be executed on grounds of any kind of wood, and without the introduction of raised studs. When applied to articles of furniture, raised studs are undesirable, as they are dust holders.

CHAPTER IV
DECORATION BY THE PROCESS OF
LAMINATION

CHAPTER IV

DECORATION BY THE PROCESS OF LAMINATION

THE process of decorative turning, to the description of which the present chapter is devoted, differs essentially from that of studding, described in the preceding chapter: it may also be considered a more legitimate branch of lathe-work, in so much that, practically, no tools are required in its practice beyond those commonly called for in the process of ordinary wood-turning. The process of lamination is more concrete in its results than that of either plain- or pattern-studding as already described: at the same time it may be pronounced more difficult; at least, it requires somewhat greater skill and more patience in its successful manipulation. To the expert turner, however, even with the simplest form of wood-lathe and the ordinary turning tools, it presents absolutely no difficulties. Taste in the matter of form and in the harmonious and effective arrangement of the coloured materials—woods and ivory—is absolutely necessary for the production of artistic work.

While lamination is most effectively employed for the decoration of plain or uniform surfaces produced in the lathe, which without it would be tame and of little or no value from an artistic point of view, it is also of considerable importance in giving a distinctive value and force to many-membered mouldings. It may be remarked, however, that in decoration by lamination, elaborate mouldings or other forms of minute projecting details are not essential elements. In even the most ambitious essays in this branch of decorative turning, mouldings or other fanciful contours should be introduced with a considerable degree of reserve, and always under the dictates of good taste; and, further, they should be introduced in a design more with the aim of building up a well-considered colour-scheme, than with the desire of displaying great manipulative skill or complex tool-work. The decorative turner should bear in mind that there is a proper place for everything his art can legitimately compass; and that it is a mistake to introduce anything that is unnecessary or out of place, from an artistic point of view, merely with the desire—laudable enough in itself—to display his dexterity of hand, and with the probable result of overloading his work with undesirable elaboration. Plain surfaces and simple forms are unquestionably the most suitable to receive decoration by lamination. Artistic coloured effects

are those which the turner should chiefly aim at in such decoration; form, beyond what the design of the work legitimately calls for, being of secondary importance. It is proper to remark, in addition to what has already been stated regarding the ordinary turning-tools, that in the production of some forms of delicately-detailed work, such as small, many-membered mouldings or sinkings, specially-shaped cutting-tools may be required, adapted for the production of convex, concave, ogee, and other contoured members, with ease and precision.

As has been briefly outlined in our introductory chapter, lamination in turnery is the mode of producing artistic, decorative, and colour effects, primarily on plain surfaces, and, in a secondary degree, in mouldings or other ornamental features, by associating, in direct contact, and on some definite system, a selection of woods of different colour-values, and arranging the same according to the harmonies of analogy and contrast. When an arrangement according to the harmony of analogy is desired, woods have to be selected, the colours of which belong to the same or analogous families, the result being a very soft combination. On the other hand, when the harmony of contrast is desired, woods belonging to entirely different families of colour must be selected, and so associated as to produce very pronounced effects: the greatest contrast possible is produced

by the direct association of ebony and holly (or ivory). Woods of purple and light yellow colours, and of bright red and green tints, produce other and less vigorous contrasts. The introduction of holly or ivory in all combinations imparts an increase of contrast.

Lamination is generally and most legitimately disposed at right-angles to the longitudinal or true axis of the article turned, that is, in the manner indicated in the four diagrams given in Plate IV., and still more fully exemplified throughout the candlestick illustrated in Plate V. In all these illustrations the different tints indicate the several lamina or layers of differently-coloured woods. For the sake of variation, and the production of certain other decorative effects, the lamination may be disposed in the direction contrary to that just mentioned, that is, along, or parallel to, the direction of the true axis of the article turned. This latter method is much more difficult in the hands of the ordinary turner, or one not expert in cabinet-work, from the fact that, in addition to the lathe-work, it calls for the use of the bench and its tools; at the same time it is neither so legitimate in turnery, nor so happy in its decorative effects as is the former method, illustrated in Plate IV. For the sake of convenient distinction, the former method may be properly designated *transverse lamination*, while the

latter may, with equal correctness, be called *longitudinal lamination*.

From what has already been said, it will be clearly understood that decorative lamination assumes two practically distinct forms; first, that which is confined to plain or uniform surfaces, and in which both transverse and longitudinal lamination may appear; and, secondly, that which is used to accentuate and impart richness of effect to mouldings and other features turned in relief, and in which transverse lamination can alone be introduced. As the latter method of lamination is the simplest, and may be considered the more legitimate one, from the ordinary turner's point of view at least, it may properly be described first.

As the several members constituting a moulding or other projecting feature will necessarily be finished separately in the lathe, in the form, for the most part, of thin discs, flat on both sides, and simply shaped at their edges, as indicated in diagram A in Plate III., which is a section, showing in a disconnected manner the several members of the base moulding shown in diagram B in its connected or finished form, a special and simple method of chucking has first of all to be devised. The only permanent lathe-chuck necessary in the process now under consideration is the ordinary disc-and-screw one; on this will be screwed, as required, a disc of any available wood—preferably some close-grained hard wood—of

sufficient thickness to amply cover the point of the screw. The surface of the disc must be turned perfectly flat, and upon it must be glued a piece of thick manilla or cartridge drawing-paper; in some instances a thin card will be found more serviceable than paper. The slab of wood, which is to form any member of the moulding to be executed, is first planed, or brought to a perfectly level surface on one side, and then glued on that surface and attached to the paper on the chuck. When the glue is dry, the chuck is again placed in the lathe, and the outer surface of the attached slab is turned perfectly level, being brought, at the same time, to its required thickness; its edge is then turned to the contour called for in the design of the moulding. In turning the edge, it will be found, in all probability, necessary to cut away the surface of the wood chuck adjoining it, so as to get room to use the finishing tool. The edge can now be perfected in every respect and polished. Nothing remains to be done but to turn out the central dowel hole (shown in the diagram), and to remove the completed disc from its chuck by passing a thin table-knife between them, splitting the paper or card. The paper that adheres to the finished disc can be scraped off, and the glue removed with a cloth dipped in hot water, or with glass-paper that has been pasted on a piece of plate-glass. When all the members of the moulding have been correctly

turned and finished, in the manner just described, each having been separately and specially chucked, to save time and trouble, the whole can be glued together in the following manner. The dowel, upon which all the members of the moulding have to be held in proper position, must be turned sufficiently exact to the holes in the members to admit of a piece of thick cartridge paper being wrapped around it tightly, and pasted together at its overlapping edges, but in no way attached to the surface of the dowel so as to prevent its removal.¹ The dowel will, of course, be made considerably longer than the depth or thickness of the moulding in its finished state; and two blocks of wood must be provided and bored to receive the projecting ends of the dowel when the members of the moulding are being glued together. The gluing can now be proceeded with. When the first member of the moulding has been put on the papered dowel in a convenient position, the lower surface of the next member must be covered thinly with newly-made glue, and immediately pressed against that already on the dowel. Each succeeding member must be similarly treated; and then the blocks must be placed over the free ends of the dowel

¹ This is advisable in ordinary practice, but in some cases it may be found advisable to permanently fix the dowel immediately in the moulding. When this is desirable, the paper sheathing should be omitted, allowing the moulding to be glued to the surface of the dowel.

and against the moulding, and the whole pressed tightly with a good hand-screw or screw-clamp. When the glue is dry, the dowel can be withdrawn, and the ends of the paper, which has become fixed to the moulding in the process of glueing, can be cut away level with the surfaces of the upper and lower members. The moulding is now complete, and ready to be attached to the article of which it is to form a part.

In Plate III. five designs for base mouldings are given in diagrams A-B, C, D, E, and F; two mouldings of a capital or cornice character in diagrams G and H; and three band or knop mouldings in diagrams I, J, and K. Before passing on from this plate it is desirable, to impart to it as great a practical value as possible, to suggest suitable combinations of coloured woods in connection with the several mouldings illustrated. The base moulding at A and B can have its plinth (shown black) of ebony or rosewood; its large round member of padouk; its next, concave member of green ebony, or, if a brighter contrast is desired, of laburnum; the upper round member of tulip-wood or canary-wood. The base-moulding C may have its first or lowest member of thuja; its second member (shown black) of ebony; its third member of fustic; and its upper round member of tulip-wood or princes-wood. The base moulding D may have its first member of purple-wood; its second member of

the brightest cam-wood; its third member of choice laburnum; and its upper member of satin-wood. The base moulding E may have its first member (shown black) of ebony; its second member of deep laburnum; its third round member of choice ruby-wood; its fourth, concave member of satin-wood; and its top member of thuja. The base moulding F may have its first member of ebony or rosewood; its second small member of holly or light boxwood; its third large member of king-wood; its fourth member of fine satin-wood; and its top member of the brightest padouk, or of rosewood, as indicated by being shown black in the diagram.

The capital or cornice moulding shown at G may have its first, or neck, member (shown black) of ebony or rosewood; its second member, or bell, of choice laburnum or canary-wood; its third member of bright padouk or thuja, divided by the narrow band of holly or boxwood; and the top member of ebony. The moulding H may have its first, or neck, member of ebony; its second member, or bell, of satin-wood; its third member of laburnum; its fourth member of ruby-wood or dark padouk; and its top member of black or dark-green ebony.

The band moulding shown at I can have its small members at bottom and top of ebony or rosewood; its two concave members of satin-wood, and its large central member of purple-wood or violet-wood. The

band or knop moulding J may have its bottom and top members of calemborg or fine green ebony; its second and sixth members of tulip-wood; its third and fifth members of holly or light boxwood; and its central member (shown black) of rosewood or ebony. The band or knop moulding K may have its bottom and top members of satin-wood or boxwood; its second and sixth members of tulip-wood or braziletto; its third and fifth members of ebony; and its central fillet of satin-wood, or holly if a strong contrast is desired.

The combinations of coloured woods given above are all more or less illustrative of the harmony of contrast, but entirely different combinations can be devised in which the harmony of analogy will predominate; for this purpose woods will have to be selected, the tints of which belong as closely as practicable to any one family, or to, at least, any two allied families of colour. It is only when extremely subdued and softly graduated effects are desired that harmonies of analogy are likely to be preferred to the more or less pronounced effects produced by contrasts of colour. Harmonies of analogy are less successful, as a rule, in the mode of decorative turning now under consideration than in that to which the following chapter is devoted. In the scheming of mouldings, such as have been described above and illustrated in Plate III., positive contrasts of colour will always be

found more satisfactory than any softer harmonies, because, as every designer must know, all mouldings are largely under the influence of shading and positive shadows, which necessarily exercise a strong subduing effect. Base mouldings, from their position with regard to falling light, are affected with shadows in a much less marked degree than mouldings which overhang, such as those of the capital or cornice form represented in diagrams G and H in Plate III., or even those of the band or knop form, represented in diagrams I, J, and K, the lower portions of which overhang to some extent. In the decoration of plain surfaces by the process of lamination, either harmonies of contrast or analogy can be resorted to, and, indeed, if artistically arranged, both the harmonies can be combined with results that will leave nothing to be desired.

Directing attention to Plate IV., in which are represented four cylinders decorated by the process of lamination, we may point out that in diagrams A and D harmonies of contrast are alone intended, while in diagrams B and C both harmonies of analogy and contrast may be introduced with very pleasing results. Suggestions respecting the various woods to be employed in the general formation and effective lamination of these cylinders or shafts will not be out of place here.

The cylinder represented in diagram A may

have its ends and central portion of almost any richly-coloured wood ; and as the surfaces of these portions may be of considerable size a favourable opportunity is afforded for the use of boldly-figured woods. Accordingly, such choice woods as brazilletto, amboyna, king-wood, snake-wood, zebra-wood, and richly-figured satin-wood can be used with good effect. While all these three portions can be of the same wood, it is not necessary that such should be the case, for very pleasing and highly decorative effects can be obtained by introducing in the end portions a wood differing in colour and figure from that introduced in the larger central portion ; for instance, if the latter portion is made of snake-wood or zebra-wood, the ends may be of brazilletto or tulip-wood, and *vice versa*. None of the arrangements suggested will necessarily interfere with the effectiveness of the contrasting lamination in the narrow bands, which should in all cases be of holly (or ivory) and ebony, as indicated, when a sharp contrast is desired ; or of boxwood and rosewood when a softer effect is preferred, and when satin-wood is not used for the larger portions.

The cylinder represented in diagram B calls for a more elaborate arrangement of coloured woods than that required in connection with the cylinder above described ; it has in its construction thirteen lamina, necessarily employing four, and allowing the

introduction (if considered desirable) of six differently-coloured woods. In addition to this, the process of plain-studding is employed in its decoration. For the ends and central portion, woods of a medium tint will be the most suitable, such as satin-wood, tulip-wood, cam-wood, laburnum, canary-wood, sandal-wood, and princes-wood. Such woods allow of the introduction of others of a deeper and richer colour, and of an analogous character, in the lamina, shown of a darker tint, on each side of the ebony borders of the studded lamina. The studded lamina can be of ivory or light boxwood, or, if not more than a quarter of an inch in thickness, they can be of holly. It is much to be regretted that holly of a fine white colour, and of good and thoroughly-seasoned quality cannot be readily obtained above a quarter of an inch thick. The studs in all cases should be of ebony.

In the cylinder represented in diagram C a somewhat different arrangement of coloured woods is indicated. In the construction of this cylinder, as in that of the preceding one, either four or six differently coloured woods may be used, and to both combinations ivory may be added in the shape of the studs shown on the ebony lamina. When only four woods are used, the broad lamina, adjoining the thin holly borders of the studded ebony lamina, will be of the same wood; but when six

woods are introduced, the end lamina will be of different wood to that on each side of the central portion of the cylinder (shown of a lighter tint); for instance, the central portion may be of satin-wood, the broad lamina adjoining it of ruby-wood, and the end lamina may be of king-wood or green-ebony. The narrow lamina, on the sides of the ivory-studded black lamina, may be of holly or pale boxwood. It would be impossible to enumerate the changes that could be made by the use of six different woods in different combinations in even so small an object as that represented in the diagram.

In the cylinder represented in diagram D, the arrangement of the coloured woods, indicated by the different shades employed, points throughout to a harmony of contrast, in which pattern-studding assists the effect produced by the lamination. In this case the ends and the central portion may either be of the same wood, or the central portion may be of any colour, while the ends may be of a wood of a contrasting colour and preferably of equal value or intensity of tone; for instance, the central portion may be of tulip-wood and the ends of very choice laburnum, or *vice versa*. Again, padouk or thuja and calemborg of the brightest quality may be similarly associated. The narrow laminations in all cases to be of holly and ebony, and the pattern-studding

to be executed in ivory and ebony, or in holly and ebony, as indicated.

In Plate V. is given a suggestive design for a sideboard or mantelpiece candlestick, in the construction of which are required plain turning; lamination, both in the formation of the mouldings and in the decoration of the plain cylindrical portions of the shaft; and plain- and pattern-studding. In examining the design, the reader interested in turning will observe the proper use of the base, knop, and capital mouldings, all of which call for lamination in the manner specially described with reference to the diagrams given in Plate III. In the second place, he will see the practical application, in the shaft of the candlestick, of the laminated cylindrical work above described, and specially illustrated in Plate IV. As it is highly probable that a pair of candlesticks would be fabricated at the same time, we would suggest that a different pattern of lamination be adopted in the cylindrical members of their shafts, while the treatment of all the other members would remain the same; this slight variation would destroy dead monotony, without affecting uniformity of shape. It is not necessary, from an artistic or decorative point of view, that the same arrangement of the coloured woods should obtain in both candlesticks; but it is, on the other hand, desirable that a true balance of colour should be observed. The

great variety of coloured woods at the disposal of the turner should render this observance of the balance of colour an easy matter under the guidance of ordinary taste and judgment. The following suggestions for the selection and arrangement of the woods required in the construction of one candlestick, as represented by the different shades in Plate V., may be serviceable to the turner inexperienced in this class of work.

Commencing at the base of the candlestick:— The ball-feet may be of any light or medium-coloured wood, as they exercise no appreciable effect on the colouring of the base. The first member of the base to be of ebony or dark rosewood, studded with ivory or holly, and its second convex member may be of boxwood or pale satin-wood. The conical portion, which presents a surface sufficiently large for the display of figure, may be of amboyna, zebra-wood, or thuja if a richer glow is desired; the pattern-studding to be of ivory and ebony, unless a quieter effect is preferred, when boxwood may take the place of the ivory. The moulding between the portion just described and the shaft has four lamina: these may be of boxwood, Brazil-wood, pale satin-wood, and ebony. The cylindrical portions of the shaft may have their lower and upper lamina of calemborg (of bright, uniform tint) or choice laburnum, and their central portions of rich tulip-wood or padouk; the

decorative bands to have their outer lamina of ivory or holly, and their inner ones of ebony studded with ivory. The knop in the centre of the shaft to have its small beads of ebony, its two concave members of boxwood or pale satin-wood, and its central flat member of purple-wood or rosewood, with its projecting studs of ivory, carrying half-balls of bright red wood. Small carbuncles would be very suitable and effective here, and they can be procured at small cost from any working lapidary. The small neck-moulding on the top of the shaft to be of ebony and boxwood, as indicated. The bell of the capping or capital, presenting as it does a plain surface of considerable size, may be of some figured wood, either similar to that selected for the conical base, or one practically contrasting with it. The two upper lamina to be respectively ebony and padouk, as indicated. The candle tray to be of polished brass, copper, or silver, as taste and means may dictate.

It may be said here that, to save space in the illustration, the cylindrical portions of the shaft have been drawn as short as such a design reasonably permits; but it is obvious that they may be considerably elongated with advantage, and decorated with more elaborate lamination and with pattern-studding. Although we have confined flush-lamination to these portions of the candlestick, it would be quite as effective if introduced, instead of the pattern-studding,

in the conical base. A broad belt of ebony or rosewood studded with ivory or some yellow wood, between narrow lamina of holly, would be effective in a central position in this base. If the ebony or rosewood belt is of sufficient breadth, it may be effectively decorated with pattern-studding, any of the patterns represented in Plate II. being suitable, flush studs alone being used. The bell, in the capping of the candlestick, could also be enriched in a similar manner, the lamination being narrow, unstudded, and, preferably, kept low or close to the neck-moulding from which the bell springs; the upper portion of the bell should always be left plain, as horizontal lines would tend to disturb the upward sweep of its curve.

We have now to briefly describe and to illustrate the process of executing such transverse lamination as is illustrated in Plates IV. and V. Taking one of the cylindrical divisions of the shaft of the candlestick, represented in the latter plate, as an example, the process of executing the lamination there indicated is as follows:—The piece of wood selected to form the central portion of the cylinder must be of sufficient length to extend, when turned, beyond the ends of the cylinder when finished, so as to provide projecting dowels for its attachment to the other portions of the candlestick adjoining it. This piece of wood is centred in the lathe, and the required portion of the cylinder turned exactly to the necessary length, and very nearly

to its final diameter, its ends being truly squared to the axis of the piece, so that the immediately adjoining lamina may bed accurately upon them. The remainder of the wood, at each end, must be turned down truly to the size determined on for the cores or dowels. At this stage the turned piece assumes the form shown, in section, at A in the accompanying illustration. The next proceeding is to prepare the several discs required for the lamination and the completion of the cylinder; these are indicated, in section, at B, C, and D. The discs should be turned, on wood chucks, in precisely the same manner as that already described for the lamination of mouldings. The discs, like the central portion A, must be left of a diameter somewhat larger than the final dimension, and, after the paper and glue are removed, their surfaces should be lightly rubbed on a sheet of fine glass-paper, which has been carefully pasted on a piece of plate-glass, so as to remove any slight inequalities that may have been left while in the lathe, and to secure perfectly

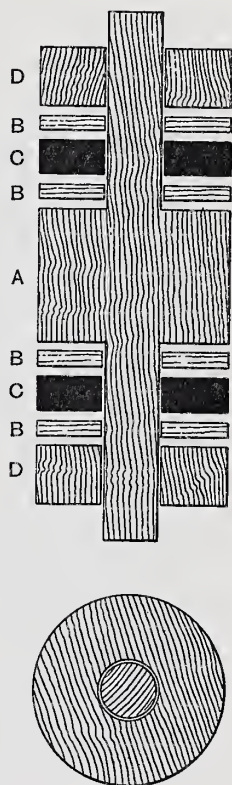


FIG. 2.—Sections of a laminated cylinder, showing construction.

close glue-joints. Too much care cannot be exercised in this direction. Each ring, as turned and cleaned, should be successively glued to the middle portion and to each other, being screw-pressed between blocks of wood, bored to receive the dowel portions. When all the rings or lamina are glued on, the entire piece must be replaced in the lathe, and its surface turned down to a uniform level ready to receive its studding. After scratching the centre lines on the ebony lamina, and dividing the same for the number of studs intended, the piece has to be removed from the lathe, bored, and the studs glued in. The process is completed by replacing the piece in the lathe, turning its surface perfectly true and to the exact diameter, and its ends to the required length, and otherwise finishing and polishing the surface in any desirable manner. To preserve the colours of the woods, it should be French-polished, white polish being used so as not to darken the ivory and holly when such materials are introduced.

We may conclude our remarks on decorative lamination by describing that class to which we have given the distinctive name *longitudinal lamination*—namely, lamination along, or parallel to, the true axis of the turned object. While there is comparatively little use for this class of decorative lamination, it cannot properly be ignored in such a treatise as the present. It is, accordingly, necessary

to briefly describe its nature and the process of its construction. Unlike transverse lamination, to the description of which the present Chapter, up to this point, has been entirely devoted, longitudinal lamination cannot be artistically used alone, nor can it be considered a legitimate offspring of the lathe.

On the other hand, when associated with transverse lamination, it is capable of producing pleasing decorative effects. The accompanying illustration, Fig. 3, will convey some idea of the class of lamination now under consideration, unassociated with transverse lamination. The transverse section, shown below, clearly indicates the mode of construction to be followed in the formation of the most substantial longitudinal laminated work. The lamination has to

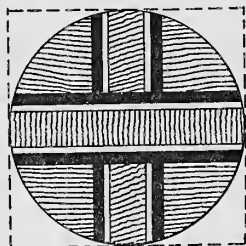
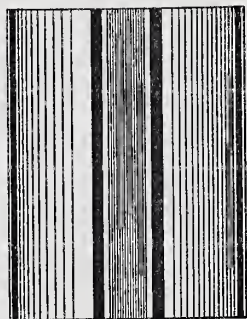


FIG. 3.—Illustrations of a cylinder longitudinally laminated.

be prepared at the bench, and quite independently of the lathe; the several layers of wood being planed to the required thicknesses and securely glued together. The manner in which the pieces, so prepared, are cut and placed in association with the four filling-up pieces (originally quadrangular, as indicated by the dotted

lines) is clearly shown in the section. When all the parts are built up and securely glued together, the completed block has to be accurately centred in the lathe and turned to the size and form required. The finished appearance is shown at A. Pieces of this class can be inclosed between transverse lamination with good effect. As in transverse lamination, longitudinal lamination can be executed in any combination of coloured woods, analogous or contrasting; it can be enriched with both plain- and pattern-studding in any tasteful manner.

CHAPTER V

DECORATION BY THE PROCESS OF
GEOMETRICAL INLAYING



CHAPTER V

DECORATION BY THE PROCESS OF GEOMETRICAL INLAYING

THE process of decorative turning, to the full description of which the present Chapter is devoted, is somewhat more difficult and exacting in its successful performance than either of the processes described in the preceding two Chapters ; but, at the same time, its results are much more effective and beautiful than any that can possibly be produced by means of studding or lamination, alone or in combination.

The process now under consideration is properly designated *geometrical inlaying*, because the coloured woods and ivory employed are laid or inserted into each other, and invariably produce, if artistically arranged, geometrical forms or devices. Geometrical inlaying is strictly a product of the lathe, in so much that all the work necessary for its production can be executed in the lathe, if considered desirable, with the single exception of the glueing of the parts together as they are turned and bored. But it is neither necessary, nor in all cases desirable, for

the lathe to be resorted to exclusively, as will be explained later. As all the elements employed in the production of a work of geometrical inlaying are originally or finally of a circular form, it might reasonably be supposed, on first thoughts at least, that little variety could obtain in its designs; but in reality there is a very wide field for the invention, ingenuity, and taste of the turner. Designs can be produced in almost endless variety, due to the different arrangements and respective proportions of the several circular elements, in combination with the varied effects of colour produced by the association of the many coloured woods and ivory at the disposal of the turner. A glance at the plates which illustrate this branch of decorative turnery will go far to satisfy the reader of the truth of the statement just made, while their designs will point the way to further treatments and combinations. The designs and colour-combinations are most readily produced on flat surfaces, but slightly convex surfaces can be adopted if considered more suitable for the article to be decorated. In all cases, so far as legitimate turning is concerned, the surfaces are in the form of circular medallions, as shown in the plates. Flat medallions are most suitable for insertion in articles of furniture or in any flat surface; while convex medallions form beautiful decorations for the lids of circular boxes,

produced in the lathe, and which may be further enriched with lamination and plain- or pattern-studding; this the practical turner will very readily understand. Both flat and convex medallions, when used singly, can be inserted in flat surfaces; but combinations of medallions, such as are represented in Plates X., XI., and XII., are suitable for insertion in flat surfaces only. At the same time it may be pointed out that, while the medallions surrounding the central one must be flat, there is no reason why the central one should not be slightly convex or flat, and slightly raised (say $\frac{1}{8}$ inch) above the surface of the other medallions. All flat, single, or compound medallions, can be inserted flush with the general surface of the article decorated, or slightly relieved from the same; but for useful articles of furniture the flush method is to be strongly recommended, while in many cases it is imperative: this matter will be more fully touched upon when we speak of the practical application of geometrical inlaying.

Single circular medallions are not only more quickly made, but are of much more general use when applied to turned works and articles of furniture, than the compound forms. But most beautiful and artistic effects are produced by the geometrical arrangement of lesser medallions around a larger central one. Such arrangements will readily produce trefoils, quatrefoils (as shown in Plates X.,

XI., and XV.), or sexfoils (as shown in Plate XII.): even a greater number of surrounding medallions can be employed, when they will necessarily be smaller in diameter and simpler in design, somewhat after the fashion shown in the interior of the lower medallion in Plate IX. These lesser surrounding medallions may, instead of being cut into by the central medallion, be placed completely free of it, when they assume, strictly considered, the place and office of decorative studding: this disposition is highly suitable for the decoration of articles of furniture which present plain surfaces of considerable size, adapted for the reception of such inlays.

While single circular medallions permit of a great number of designs and colour-combinations, of which the eleven given on the accompanying plates convey some idea, the compound medallions, in their forms and proportions, in the designs of their inner and outer portions, and in their different coloured woods, present, as has already been stated, a practically unlimited source of variety. It is remarkable to find how completely different the same design appears when executed respectively in harmonies of contrast and analogy, or in the same woods counterchanged in their relative positions.

It will be observed, on examining the medallions represented on Plates VII., VIII., IX., and X., that in the process of geometrical inlaying, studding is largely

resorted to, to enrich broad belts and the spandrils created by the foliated designs; and in the lower medallion in Plate XIII. lamination is indicated. Indeed, all the ornamental work in this process may be considered as studding carried to its highest development, and on the largest scale desirable for ordinary decorative purposes. In the circular medallion in Plate IV., and in the compound quatrefoil medallions in Plate X., plain-studding appears in the main belts or rings, producing very striking effects: these designs, however, are not dependent on the studding, for they would be perfectly satisfactory without it. The introduction of single studs in the spandrils has always a good effect. In the majority of designs their presence is certainly a gain, as will be realised on glancing at the medallions given in Plate IX., and still more notably in Plate VII., in which large inlaid studs are shown in the spandrils of the trefoil and quatrefoil.

Before specially commenting on the designs of the several simple and compound medallions, and giving suggestions respecting the appropriate woods to be employed in their construction, it is desirable that the reader should be made acquainted with the method of fabricating them in the lathe, with the occasional use of the brace and bits. The method to be followed in fabricating all the geometrically-inlaid medallions illustrated in the accompanying

plates is extremely simple, while, perhaps, more than ordinary skill, care, and patience are called for in the accurate execution of their designs; but experience has taught us that, to use a trite saying, reversed, the game *is* worth the candle. In the first place it is essential that a correct drawing be made of the design to be carried out, so that all the component parts may be made accurately to scale, and, in the case of the smaller inlays and studdings, to suit the sizes of the available brace-bits, the use of which is called for in the foundation of the trefoil, quatrefoil, and other foliated patterns¹ and studdings shown in the plates. All the concentric rings and fields of the medallions are, of necessity, formed in the lathe, and on the simple wood-chucks described in the preceding Chapter in connection with the formation of laminated mouldings. On these wood-chucks are prepared such plain or inlaid members as are required in the production of the foliated medallions represented in the several plates. These members are subsequently inserted in the holes

¹ If the holes for the reception of these inlays are to be bored by means of revolving cutters in the lathe, through the agency of the dividing-plate, slide-rest, and overhead-motion, it is, of course, obvious that, in preparing the design, no necessity exists for confining them to any special size, as must be the case when brace-bits of the most desirable kind are to be used. It may be remarked, however, that if the "patent expansion bit" is used, all objection to the work of the hand brace is removed; these bits cannot be used for boring small holes, such as are required for studding of the size introduced in medallions.

bored for their reception in the field of the medallion proper, while it remains attached to its wood-chuck. In the expeditious production of some of the more elaborate medallions shown, and especially those of compound form, numerous wood-chucks will be required; but as these are only small pieces of common wood, their number is a matter of little importance: saving of time is the chief consideration in high-class and exacting work of this description.

After the design has been drawn correctly, the next proceeding is to attach the piece of ebony or other wood, which is to form the marginal-ring and the foundation for all the inlays to the surface of a suitable wood-chuck, with an intervening layer of thick paper, as described in the preceding chapter. This piece of wood should, under ordinary circumstances, not be less than $\frac{1}{2}$ inch in thickness, for it has to receive all the inlays that compose the design, while it retains a substantial character in itself. When the piece has been turned to near its required diameter, and its surface has been trued, the marginal-ring must be formed by sinking the rest of the surface to the depth of $\frac{3}{8}$ inch. At this point it is desirable to refer to the accompanying illustration, Fig. 4, in which is given a series of diagrams, in section, indicating the several steps necessary in the formation of the medallion which is partly shown, in outline, in

Diagram I. Diagram II. is a section of the ebony foundation-disc, just described, showing its marginal-ring A, formed by the sinking of the rest of its surface. At the stage now reached, the chuck must be removed from the lathe, and another chuck screwed on, which has glued on its face the piece of boxwood, or some other light-coloured wood, which is to form the inner marginal-ring B. This piece must be carefully turned to accurately fit the sinking in the ebony disc, in the manner indicated in Diagram III., and after being sliced from its chuck, must be glued into the sinking in the ebony disc. The first chuck must now be returned to the lathe, and after the boxwood insertion is brought flush with the ebony, it must have its interior part turned out, leaving the inner ring B, as indicated in Diagram I. The next piece to be prepared and inserted is that which is to form the general ground C of the medallion, and this will necessarily be of some richly-coloured wood, such as padouk or purple-wood. The piece must be glued in the usual manner to another wood-chuck, and turned so as to accurately fit the sinking within the inner marginal-ring B, as indicated in Diagram V. When the piece is glued in place, and its surface turned level and smooth, it is ready to receive the design of the further inlays. The design should be accurately drawn on a piece of paper cut circular to the exact size of the medallion, and pasted evenly on

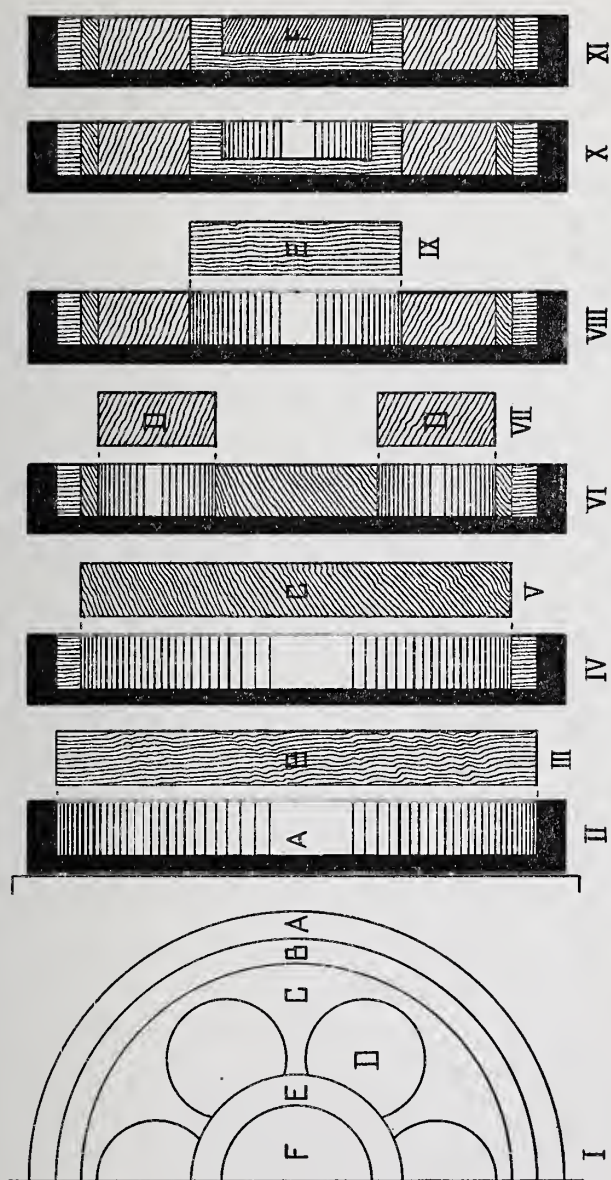


FIG. 4.—Diagrams showing the construction of an inlaid medallion.

its turned surface. This not only furnishes a perfect guide in the boring operations, but greatly tends to prevent chipping of the edges of the holes when first cut by the centre-bits. Before using the bits, the centres marked on the paper should be deeply pricked into the ground with a sharp-pointed awl, so as to properly hold the centre-points of the bits in correct position. Too much care cannot be taken in this direction, for the slightest deviation from the truth will, in all likelihood, ruin the medallion, or at least destroy its beauty. Of course, if the boring is executed in a high-class lathe, with its dividing-plate and revolving cutters, perfect accuracy will be secured; but satisfactory work from the hand of an artist is, in our opinion, much to be preferred to anything produced by automatic machinery. We may just mention the fact that all the beautiful work of this class executed by the late W. J. Audsley was entirely the product of the hand and the simple wood-lathe. When the six holes, required in the formation of the sexfoil indicated in Diagram I., are bored through the ground-piece C, down to the foundation-disc A, as shown in Diagram VI., they are ready to receive the circular inlays, two of which are shown at D, opposite their holes, in Diagram VII. These circular inlays, which may be of satin-wood if purple-wood is used for the ground-piece C, or of laburnum if the ground-piece is of padouk, can be turned on independent

wood-chucks, or in the manner recommended for studs and illustrated in Fig. 1. When accurately fitted they must be glued into their holes, and subsequently turned down flush with the existing surface of the medallion, which for that purpose has been replaced in the lathe. The next operation is to turn out the ground and portions of the foliation-pieces to admit of the circular inlay which is to form the ring E, indicated in Diagram I. In Diagram VIII. a section of the medallion is given at this stage; and opposite its sinking is the inlay E, in Diagram IX. This inlay may be of rosewood if the foliation is of satin-wood. When the inlay has been accurately fitted and glued in, its surface must be turned flush with the rest of the medallion; and then its central portion must be turned out so as to form the inner ring, indicated at E, in Diagram I., and as shown, in section, in Diagram X. The whole medallion is completed by the insertion of the small central inlay F, in Diagram I., and in the section given in Diagram XI. It will be seen in the above description that, in the entire process of constructing the medallion, the brace and bit are used only in boring the six holes for the reception of the inlays forming the foliation, every other sinking required being cut in the lathe, in the easiest manner, and with the ordinary hand-tools. Although the medallion described is of a simple character, and very similar in general design to that

of the lower medallion in Plate VI., the description of its formation practically covers all the processes required in the production of the more elaborate medallions represented in the other plates, with the single exception of the process of studding, to which we have devoted a chapter. But as no direct allusion is made in that chapter to studding disposed in flat, circular rings, such as appears in the medallions illustrated in Plates X., XII. and XIV., we may remark here that very special care must be exercised in pricking the centres for, and in boring, the stud-holes which have to be so close together. This care is necessary because the slightest irregularity is very observable in such circular dispositions; and there is always a probability, in certain woods at least, of chipping between the holes, unless the ring is end-grain, when ordinary care and keen bits can be depended upon. Such woods as ebony and boxwood present no difficulties in this direction. In boring such rings as are shown studded in Plates X. and XIV., it is obvious that the most perfect work will be performed by the use of the high-class lathe with its dividing-plate, slide-rest, and automatic cutters or drills. When the medallion is completed so far as all its inlays are concerned, with or without studding, its entire face has to be carefully turned flat, and brought to a dead level by holding against it a piece of plate glass on which fine glass-paper has been

pasted; a few revolutions of the medallion will remove any inequalities. The edge of the medallion must now be turned to the exact diameter required; and when its face is polished, so as to bring out the full colours of the woods employed, it can be sliced from its wood-chuck and used for the purpose for which it was designed.

In the following notes are given suggestions for the combinations of coloured woods suitable for the most effective rendering of all the medallions represented in the plates belonging to the present Chapter.

Plate VI.—The upper medallion to have its marginal-ring of ebony; its ground of amboyna or laburnum, with the foliation-pieces and studs of boxwood or satin-wood; the inner black ring of ebony, inclosing rings of tulip-wood and laburnum, and the centre-stud of ruby-wood or some other red wood.

The lower medallion to have its marginal-ring of ebony, with the light ring adjoining it of holly¹; its ground of tulip-wood or thuja, with foliation-pieces and the rings connecting them, as shown, of boxwood or satin-wood; its inner black ring of rosewood or ebony, inclosing a ring of laburnum, and the centre-stud of ruby-wood or bright padouk.

¹ As holly cannot be easily procured above $\frac{1}{4}$ inch in thickness, it may be found advisable, if not necessary, to glue it (crosswise) to another thin piece of wood, so as to enable it to fill up the depth of the sinking in the ebony foundation-disc, and allow of the necessary surface turning when inlaid.

Plate VII.—The upper medallion to have its marginal-ring of ebony; its ground of fustic or laburnum; its four studs of ebony with ivory centres; and its four foliation-pieces, having their outer rings of ebony, inclosing the white rings of ivory or holly; the inner rings of padouk, and the centre-studs of satin-wood. The central portion, which cuts into the foliation-pieces, to have its treatment the same as that of the foliation-pieces.

The lower medallion to have its marginal-ring of ebony, with the light ring adjoining it of satin-wood or boxwood; and its ground of thuja or padouk, studded with ivory inlaid with ebony. The foliation-pieces to be formed with rings of boxwood, rosewood, and ivory or holly, with centre-studs of purple-wood or calemborg. The central portion to have rings of ebony, ivory or holly, and tulip-wood, and its centre-stud of rosewood or green ebony.

Plate VIII.—The upper medallion to have its marginal-ring of ebony or rosewood, with the light ring adjoining it of boxwood, and its ground of calemborg or green ebony, studded with boxwood inlaid with ebony. The four foliation-pieces to be formed with outer rings of boxwood, inner rings of ebony, and centre-studs of tulip-wood. The central portion to have its outer ring of ebony, its inner ring of boxwood, and its centre of ruby-wood or rich padouk.

The lower medallion presents, in its design, opportunities for fine effects in harmonies of analogy, accentuated by contrasts. Its marginal-ring to be of ebony, and its ground of holly, studded with rosewood. The dark rings of the outer members of the foliated or flower-like design to be of rosewood. Between these rings and the central ring, the three series of members, shown in different shades, should be of three woods of analogous colours, such as ruby-wood, bright padouk, and tulip-wood; or green ebony, calemborg, and clear laburnum; an arrangement of orange and yellow woods may also be introduced in an effective manner. The central portion to have its outer ring of ebony, its inner ring of holly, studded with rosewood, and its centre-stud of purple-wood or king-wood.

Plate IX.—The upper medallion to have its outer medallion of ebony, and its ground of satin-wood, studded with rosewood. The six foliation-pieces to have their rings of ebony and ivory, and their centres of ruby-wood or very rich padouk. The central disc to have its rings of ebony and boxwood, and its field of green ebony, with the foliation of boxwood, and the centre-stud of violet-wood.

The lower medallion to have its marginal-ring of ebony; its ground of thuja, studded with ivory; and its foliation-pieces, ringed with ivory or holly, and filled in with laburnum or satin-wood. The inner

disc to have its outer ring of ebony, its second ring of canary-wood, studded with green ebony or purple-wood ; its third and fourth rings of ebony and ivory, and its central portion of boxwood, canary-wood, and beef-wood, or violet-wood.

Plate X.—The upper compound medallion, composed of five separately formed small medallions, can only assume its complete quatrefoil shape when inlaid into the woodwork of some piece of furniture, as indicated in the back rail of the settee illustrated in Plate XX. In this example the four medallions forming the quatrefoil can have their marginal-rings of ebony ; their second rings of thuja or light padouk, studded with ivory ; their third rings of ivory or holly ; their fourth rings of ebony ; and their centre studs of laburnum. The central medallion can have its marginal-ring of ebony, with the light ring adjoining of boxwood ; its ground of pure-toned calemborg ; its foliation-pieces of holly or ivory ; and its central piece of ebony and rich padouk or ruby-wood. The four small detached studs to be of ebony inlaid with boxwood.

The lower compound medallion to be formed in the manner above described. The four medallions forming the quatrefoil can have their marginal-rings of ebony or rosewood ; their second rings of satinwood or boxwood, studded with purple-wood or dark padouk ; their third and fourth rings of ebony

or rosewood and ivory; and their centre-studs of calemborg or dark laburnum. The central medallion can be carried out in the manner just described for the four smaller medallions, with the exception of its centre-stud, which should be of bright red padouk or thuja, to contrast with the other greenish centre-studs. The four detached studs to be of ebony.

Plate XI.—In this plate are given two designs for very elaborate compound medallions, which need only be inlaid in very special pieces of decorative furniture. The upper example can have its four outer medallions formed with marginal-rings of ebony; their second rings being of canary-wood or bright yellow fustic; and their inner rings of ebony. The grounds within these inner rings can be of light boxwood, having the foliation-piece of violet-wood or purple-wood; and the centre-studs should be of ivory, as indicated. The central medallion to have its marginal-ring of ebony; its ground of light boxwood ornamented with ebony studs, partly cut away, and joined together by a narrow ebony ring. Within this are three rings, formed of ivory, ebony, and satin-wood, and a centre-stud of violet-wood or very rich padouk.

The lower compound medallion can have its four outer medallions formed with marginal-rings of ebony, having the two inner rings of holly and

rosewood. Their grounds, within these rings, to be of choice laburnum or rich satin-wood studded with ivory; the foliation-pieces to be of ivory inlaid with ruby-wood or rich padouk; and the centre-studs of ebony. The larger central medallion to have its marginal ring of ebony, having its inner rings of holly and rosewood; its ground to be choice thuja studded with ivory; and its foliation-pieces of ivory inlaid with green ebony or dark calemborg. The centre-stud to be of ebony, ivory, and rich ruby-wood. A compound medallion of this design admits of an endless variety of combinations.

Plate XII.—In this plate are given two designs for compound, sexfoil medallions, which are very suitable for particularly rich decoration, and where large medallions are required without the production of an undesirably heavy effect.

The upper compound medallion can have its six outer medallions with marginal-rings of ebony, having inner rings of boxwood. The grounds, within these rings, to be of rich thuja or padouk, or, if a subdued effect is desired, of amboyna, calemborg, or green ebony. The foliation-pieces to be of ivory or holly, and the central studs of ebony or rosewood. The larger central medallion to have its marginal-ring of ebony; its adjoining broad ring of satin-wood studded with violet-wood or rosewood; its inner, narrow ring of ebony; and its ground of

ruby-wood, having the sexfoil of ivory or holly, and the centre-stud of ebony or rosewood.

The lower compound medallion is designed to furnish a favourable field for the display of harmonies of analogy. The six outer medallions to have their marginal-rings of ebony; and within these the three zones can be inserted in any three woods of analogous colours and graduated tones, such as satin-wood, deep canary-wood, and zebra-wood; tulip-wood, thuja, and Brazil-wood; or fustic, laburnum, and green ebony or dark calemborg. In all cases the centre-studs to be of ebony. Within the ebony marginal-ring of the larger, central medallion, the same analogous colour-treatment is to obtain; but the graduated colours in the ground of the medallion should contrast with the graduated colours of the outer medallions; that is, if the harmonies of red obtain in the outer medallions, the harmonies of green should be adopted for the central ground, and *vice versa*. The colours in the trefoil, graduated in themselves, should contrast with those of the ground; its marginal-rings to be of ivory. With a careful selection of woods of equally graduated tones, and with an equally careful selection of contrasting colours for the inner and outer medallions, a very artistic and refined result can be produced.

Plate XIII.—In the upper compound medallion shown in this plate, a much more favourable field

for the display of harmonies of analogy is offered to the turner than that furnished by the lower medallion in the preceding plate. In its design, an entirely different treatment obtains in the four outer medallions from that presented by all the medallions previously described: this difference exists in the eccentric disposition of their inlays, producing a shell-like effect. Respecting the selection and graduation of the coloured woods, the suggestions given in the preceding description should be observed; but in the present case four gradations are introduced in the outer medallions, which will call for a more careful selection of the coloured woods. It may be remarked that this treatment may be abandoned in favour of contrasting effects, secured by the alternate introduction of contrasting woods in the eccentric inlays: this will be fully realised by the turner who has read our manual up to this point. The central medallion calls for no special comment, its colour-treatment being dictated by that adopted for the outer medallions.

The lower compound medallion introduces another departure in decorative treatment; namely, the introduction of lamination in the grounds of the four outer medallions. The mode in which these laminated inlays are produced will be understood on referring to the description of longitudinal lamination and its attendant illustration, Fig. 3, given in Chapter IV.

The marginal-rings of the four outer medallions to be of ebony, and the inner rings of satin-wood and ebony; their grounds to be of laburnum or calemborg; and their laminated bars of rosewood, ivory, and ruby-wood or the richest padouk. The central medallion to have its marginal-ring of ebony; its ground of thuja, studded with ivory; its foliation-pieces of ivory and green ebony; and its central disc of ebony, ivory, and ruby-wood, as indicated.

Plate XIV.—This plate illustrates the colour-treatment of medallions which have to be inserted in a dark wood, such as walnut or mahogany. For such a purpose the marginal-rings should in all cases be lighter than the wood in which they are inserted, if richness of effect is desired; but when a subdued effect is aimed at, and the wood is not very dark, the marginal-rings may be of ebony. The medallion illustrated as inserted in walnut may have its marginal-ring of boxwood or satin-wood; its broad black ring of ebony, studded with ivory or holly; its third ring of boxwood; and its ground of selected purple-wood. The foliation-pieces and their connecting-ring to be of satin-wood. The inner disc to be of ebony, laburnum, and ruby-wood or rich padouk.

Plate XV.—The compound medallion in this plate is another illustration of insertion in a dark wood ground. The marginal-rings of the outer

medallions to be of boxwood; the second rings of ruby-wood; the third, narrow black rings of ebony, and the grounds of tulip-wood. The foliation-pieces to be of ivory or holly and the centre-studs of green ebony. The central medallion to have its marginal-ring of ebony; its adjoining ring of boxwood; and its ground of rich thuja, or, if a more decided contrast is desired, of choice laburnum or light calemborg. The centre-stud to be of ebony, and either ruby-wood or calemborg to contrast with the wood selected for the ground.

Plate XXI.—This plate presents two medallions, photo-engraved, and printed by the “three-colour process,” from actual examples of geometrical inlaying, executed in the lathe by Mr. George C. Audsley, of Taplow, Bucks, an expert amateur turner. The medallions are formed of ebony, boxwood, laburnum, holly, padouk, tulip-wood, and king-wood—all of which can be readily distinguished in the plate—and are inserted in a piece of quartered oak. In accuracy and beauty of execution they leave nothing to be desired and they clearly show to what perfection an amateur turner can carry this fascinating branch of artistic and decorative turning.

CHAPTER VI

THE PRACTICAL APPLICATION OF POLYCHROMATIC AND DECORA- TIVE TURNING

CHAPTER VI

THE PRACTICAL APPLICATION OF POLYCHROMATIC AND DECORATIVE TURNING

IN this chapter the turner will find a few remarks on the practical application of works of artistic and decorative turning, chiefly with respect to their employment in the decoration and ornamentation of useful objects and articles of household furniture, such as are represented in the plates which illustrate the subject. Were the works produced by the processes and means described, and also fully illustrated in the preceding chapters, confined to the practically useless, and rarely beautiful, class of objects universally produced by the purely mechanical and complicated operations of the high-class lathe, with its equally complicated automatic appliances, there would, we venture to say, be little to induce the turner to devote his time and skill, not to mention the exercise of his artistic sense and taste, in their fabrication.

The class of turnery treated of in the present manual does not encourage the production of tasteless and useless objects requiring to be protected by

“glass-shades”; but, in an entirely contrary direction, it opens up a wide field for the exercise of ingenuity and handicraftsmanship in the adornment of articles of everyday use. Furniture of the plainest and most severe character, and even of the least expensive woods, can be *gemmed*, so to speak, by products of the lathe. A glance at the five plates which accompany the present chapter will be sufficient to indicate to the reader the direction in which this gemming or adornment can be applied, but no illustrations could convey any adequate idea of the richness and beauty of the effect it produces in actual work; provided, of course, that the lathe-work is itself rich and effective in colour.

We may, in the first place, say a few words respecting the production of independent articles of utility. An example of the class of articles alluded to is furnished by the candlestick represented in Plate V., and it will be quite obvious to the turner that a great variety of beautiful candlesticks for the adornment of the sideboard, mantelpiece, and dining-table, could be made by the use of lamination and studding, after the manner there illustrated. As all the processes of decorative turning call for favourable fields for the display of their special and unique colour-effects, uniform and flat surfaces are always to be preferred to those which assume more or less complex forms. Mouldings, which become highly effective under the process of lamination, as already shown, are the only

exception to the rule just advanced. It must be quite evident to any one versed in the principles of decorative art, that no elaboration of form, in any single wood, could produce the rich effect of the lamination indicated on the shaft of the candlestick or on the cylinders represented in Plate IV. A candlestick, which can be made in many different forms, is only one of the numerous useful and ornamental articles that can be produced by the ingenious turner, under the decorative methods described in the present treatise. Beautiful stands for valuable works of art, and for flower-holders and electric lamps for table-decoration; circular boxes for holding jewellery, and for the toilet-table and many other uses; watch-stands, ring-stands, card-trays, medallion and photograph-frames, and numerous other articles, can be produced in many varied forms, tastefully coloured, and more or less richly decorated with studding and geometrical inlaying. Lamination, of course, appearing in the formation of the mouldings, and in such places as lend themselves to its legitimate introduction.

But by far the most dignified role that can be played by the decorative turner's art is that which is performed in beautifying and adding interest to household furniture. In this direction the amateur can spread himself, and proudly and permanently display his taste and handicraft. The amateur, and, indeed, the professional turner, may not be able to

construct the articles of furniture he proposes to decorate, but he can either select suitable pieces already made, or design and have such pieces specially made of some comparatively inexpensive, solid wood, such as oak, elm, or walnut. We may remark that a fine quality of oak is in all respects an eminently satisfactory wood for general adoption. When oak of a light or medium tint is used, the decorative studding will have to be dark, and the inlaid medallions must have their marginal-rings of ebony or rosewood, so as to be clearly defined against the oak ground. But, on the other hand, when dark walnut is used for the furniture, the studding must be sufficiently light in colour to be effective, and the inlaid medallions should have their marginal-rings of some light wood, such as boxwood or satin-wood, just as are represented in the medallions illustrated in Plates XIV. and XV. (reproduced from drawings on actual walnut panels). It here may be remarked, that in the event of any of the medallions represented with black marginal-rings in the foregoing plates being selected, on account of their designs, for insertion in walnut or any other dark-coloured wood, it would be necessary to change their marginal-rings to some light-coloured wood, and that would call for a complete re-arrangement of the woods required to develop their designs in effective colouring. Such a course would, however, not be a difficult matter to any one who has studied the system

of colouring set forth in all our remarks and descriptions throughout the preceding chapters.

We may conclude with a few remarks on the systems of decoration presented by the suggestive designs given in the five attendant plates.

Plate XVI.—The design given in this plate is for an occasional-table, the top of which is hexagonal, and decorated with six medallions, properly of different designs, although three designs, arranged alternately, would look well. The medallions must be inlaid perfectly flush with the surface of the top. The six, shaped supports have, in addition to the circular medallions, decorations of close and open pattern-studding, which add very much to the general effect. All medallions should be polished.

Plate XVII.—The design given in this plate is for another occasional-table of a different form to that above described. The top is circular, with the addition of four semicircular projections for the reception of the outer, circular medallions, in the manner shown. In the centre of the top is a rich, circular medallion, surrounded with plain ebony or rosewood studs. In finishing the surface, the studs have to be inserted and carefully dressed flush before the medallions are inserted. The studs will accord with the finished surface of the top, but the medallions should be polished to appear as gem-like as possible. The four, shaped supports are decorated

with single circular medallions and two straight rows of plain ebony or rosewood studding: the latter must be treated in the manner directed for the studding of the top.

Plate XVIII.—The design in the present plate is for a hall chair, preferably constructed of oak. In addition to the decorative turning, it presents ordinary plain turning enriched with plain studding of ebony or rosewood, which lifts it somewhat out of the commonplace, everyday class of turnery. The faces of the square portions of the front legs are decorated with small compound medallions and detached studs: these, however, are not of great importance in the design, and may be omitted. The back of the chair is formed specially for the effective display of decorative turning. The centre of the cross is occupied by a richly-ornamented medallion, about 4 inches in diameter, while four medallions, about $2\frac{1}{2}$ inches in diameter, decorate the shaped arms. The top-rail is decorated with three medallions, the central one being about $2\frac{3}{4}$ inches, and the side ones about $2\frac{1}{4}$ inches in diameter. While the oak-work will be left in its natural state, or lightly stained and either oiled or waxed, all the medallions should be brilliantly French-polished to produce the required effect.

Plate XIX.—The design given in this plate is for a hall arm-chair, preferably constructed of oak. The

front legs are turned, studded, and inlaid with circular medallions of a simple treatment. If desired, the turned arm-pieces may be made separate from the legs, and laminated with thin plates of ebony and bands of some warm-coloured wood, studded, as indicated. The upper surface of the arms may be decorated with medallions placed directly over the arm-pieces or supports. The seat-rails to be pattern-studded with rosewood and light boxwood, in the manner shown. The upper portions of the back legs to be plain-studded on their fronts only. The knobs to be turned separately, and laminated if considered desirable. The back is purposely designed, in its quaint treatment, to effectively display five medallions: these are shown about $3\frac{1}{4}$ inches in diameter—a very satisfactory size—but can be made longer if desired, when it will only be necessary to increase the height of the back as required. The top-rail is enriched with a single medallion, of about $4\frac{1}{4}$ inches in diameter, which forms a crowning feature to the system of decoration. As in the case of the chair previously described, the oak-work will, perhaps, be left in its natural colour, or lightly stained and oiled or waxed: but if brilliancy of effect in the decoration is desired, the inlaid medallions must be highly polished.

Plate XX.—The design in the present plate is for a hall or billiard-room settee in oak. The front

legs are partly turned, and studded and inlaid with medallions, in the manner indicated. The seat-rails are ornamented with open pattern-studding of ebony or some dark wood, such as padouk, bar-wood, ruby-wood, or green-ebony. The seven upright pieces of the back are shaped to receive their circular medallions in an artistic manner, but any other shape can be adopted, according to taste, so long as it favours the system of decoration. Two patterns only are shown in the design; but all the seven medallions may, with advantage, be of different patterns; this, however, is purely a matter of taste. The slight introduction of plain-studding in the lower portion of each upright is, perhaps, sufficient, but additional rows can be inserted if a greater richness is desired. The top-rail is boldly decorated with seven compound medallions: these may be of simple concentric patterns, as merely indicated, or of any degree of elaboration the turner may prefer: the pattern shown in the upper medallion in Plate XI. would be highly suitable and quite effective. The decoration is completed by the medallions inserted in the heads of the back legs. The mode of treating the oak-work and the medallions should, in the present case, be similar to that recommended for the finishing of the chairs described above.

While the designs given in the five plates, above commented on, show what may be considered the

extreme use of decorative turning (excluding the process of lamination) in the adornment of such pieces of furniture as are specially prepared for its more or less lavish display, it is right for us to point out the fact that there is no necessity for anything approaching so elaborate a disposition; even one good medallion, associated with some plain- or pattern-studding, will frequently be found to effectively and artistically decorate a suitable piece of furniture.

THE END

Printed by BALLANTYNE, HANSON & Co.
Edinburgh & London



A



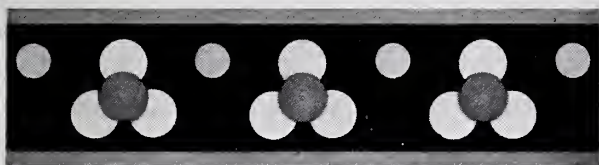
B



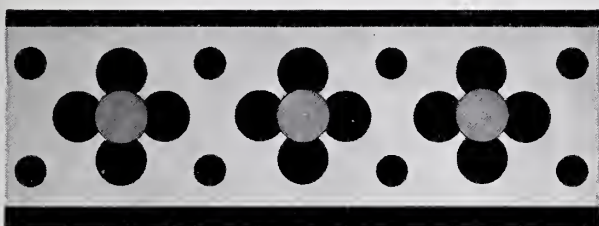
C



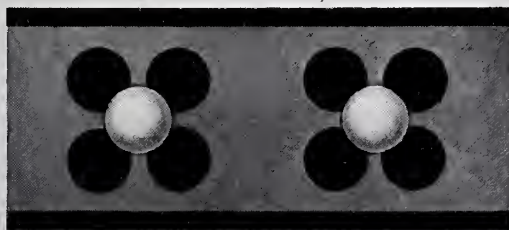
D



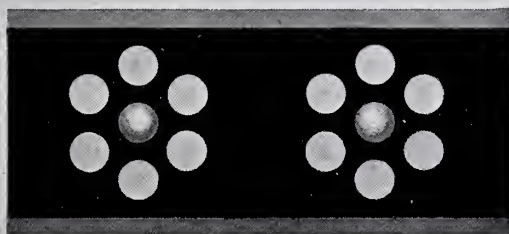
E



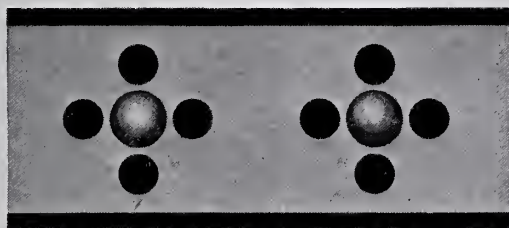
F



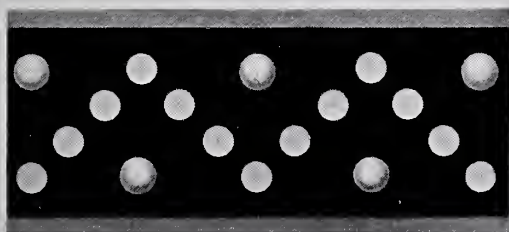
A



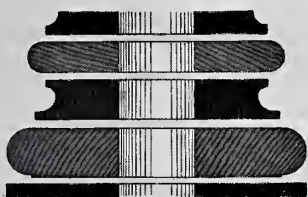
B



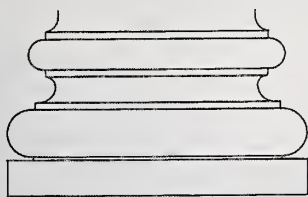
C



D



A



B



C



D



E



F



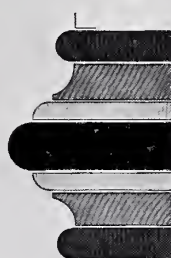
G



H



I



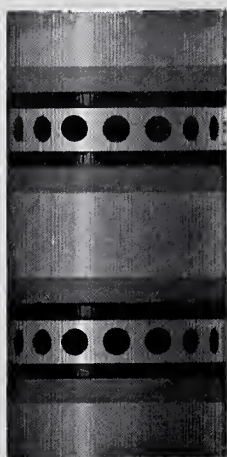
J



K



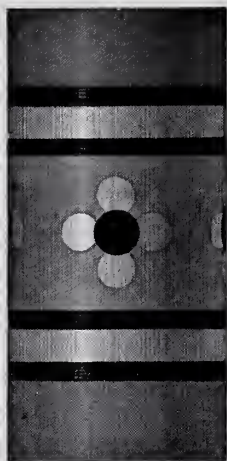
A



B

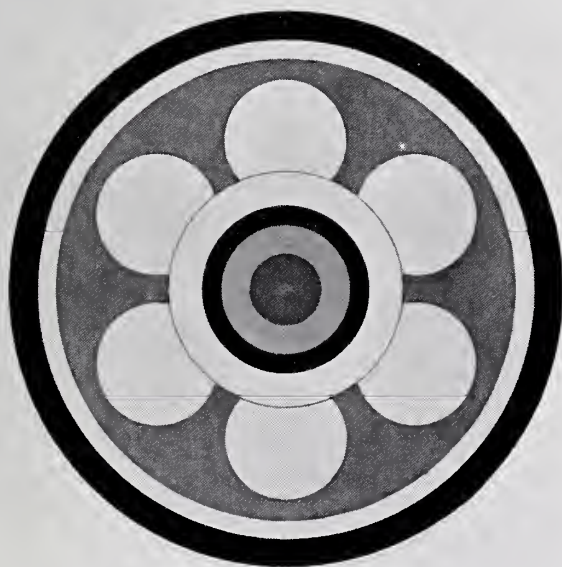
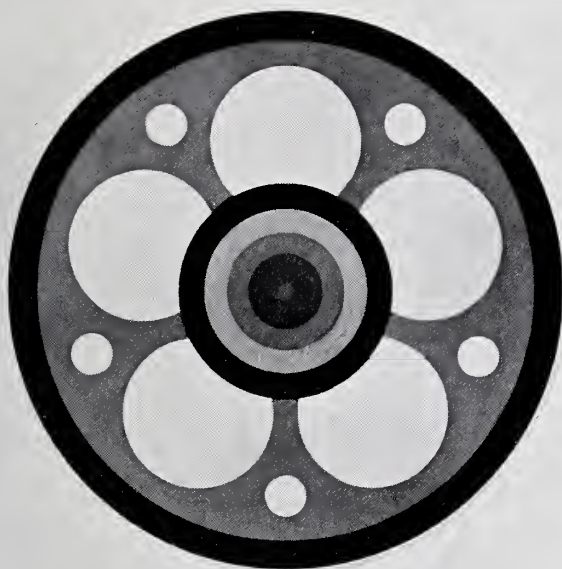


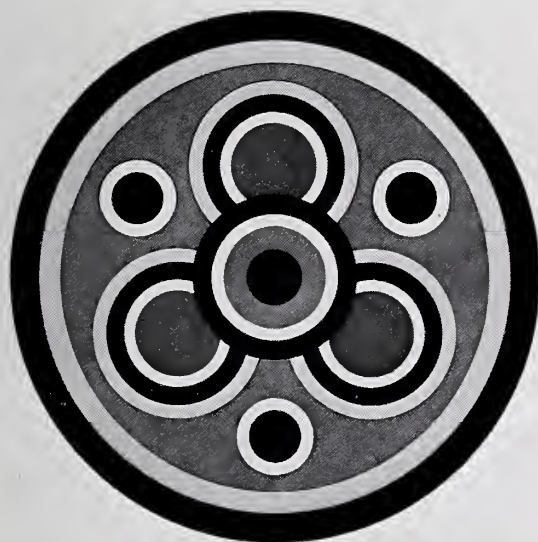
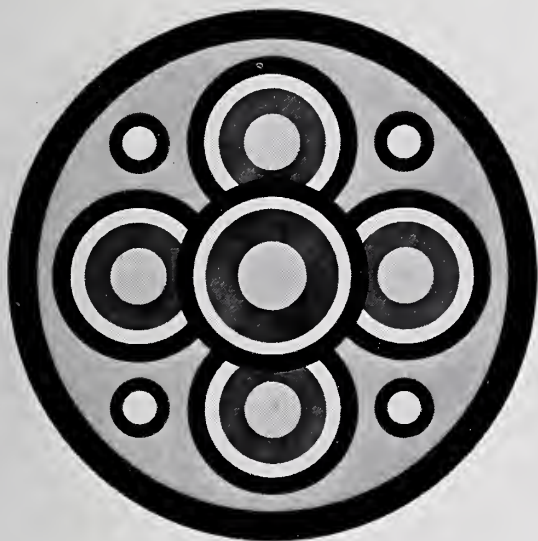
C

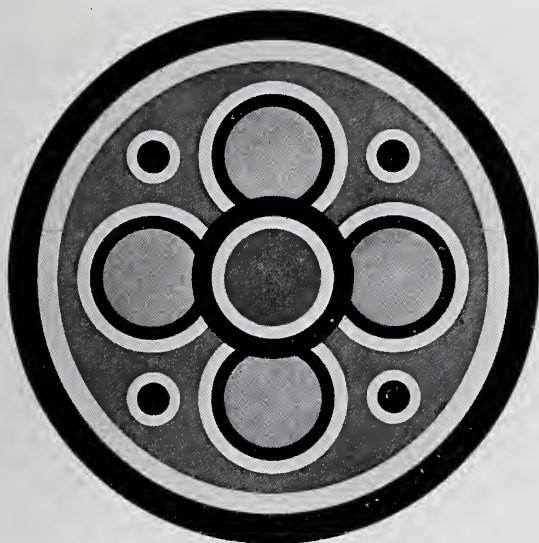


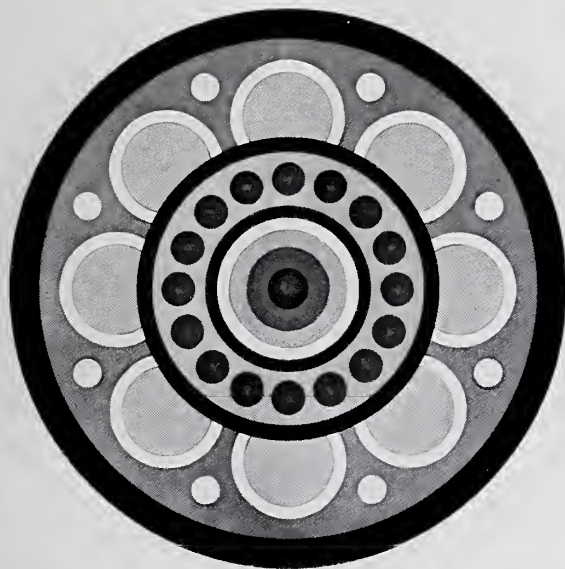
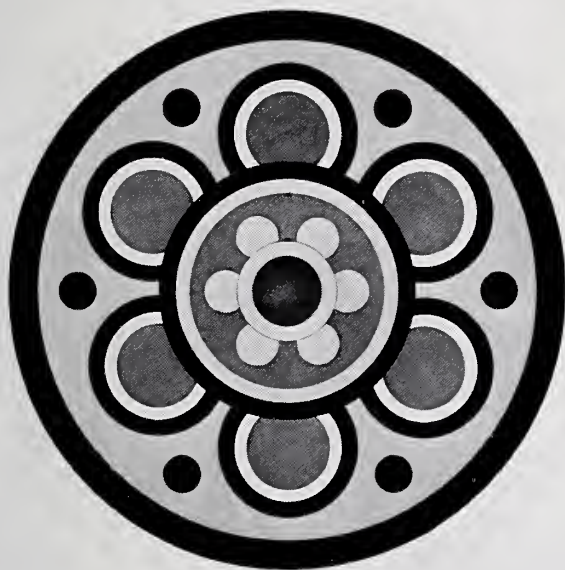
D

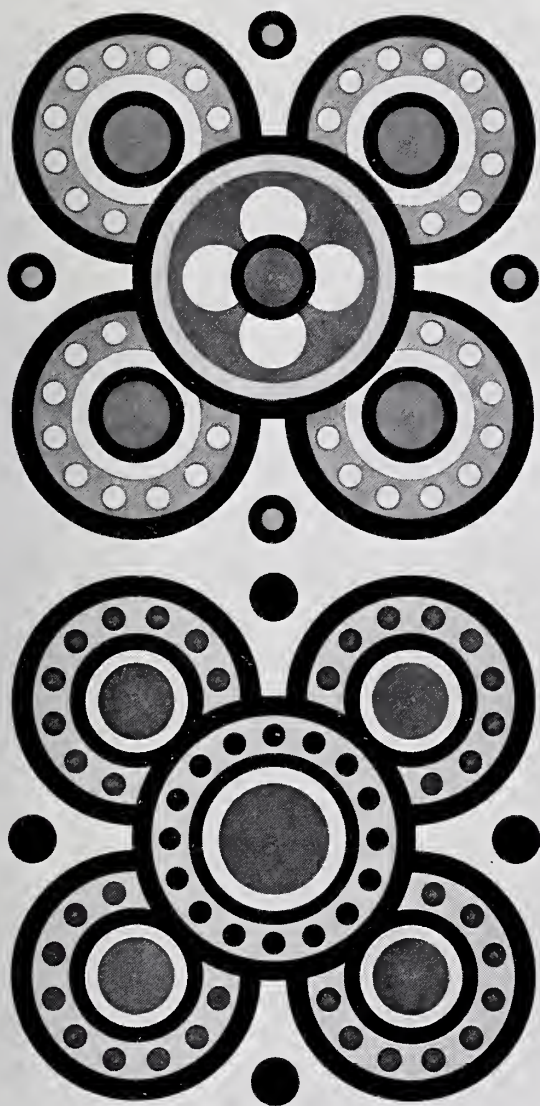


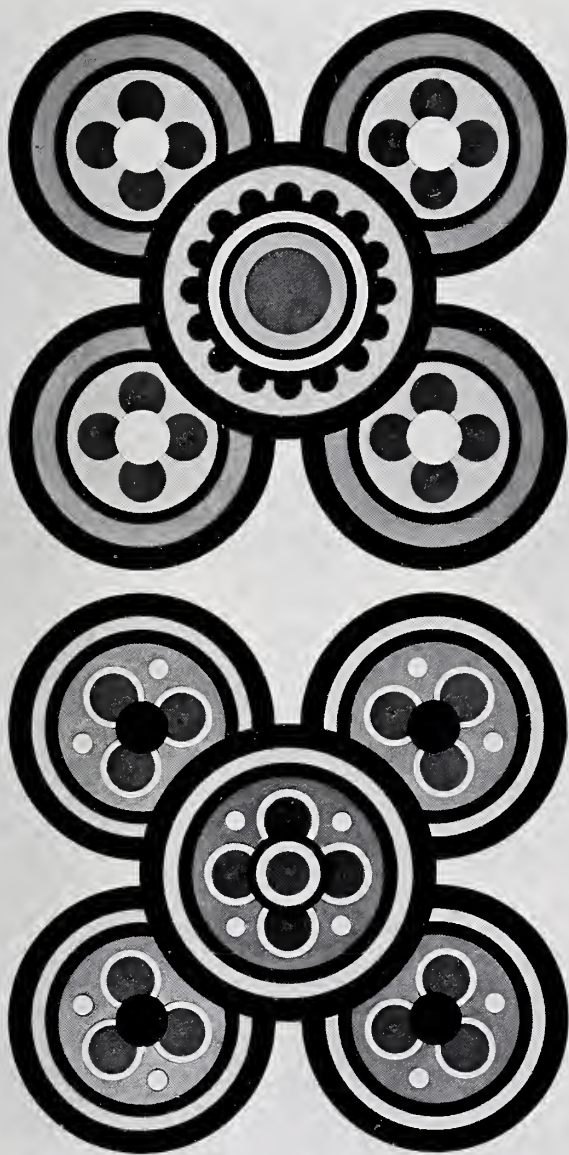


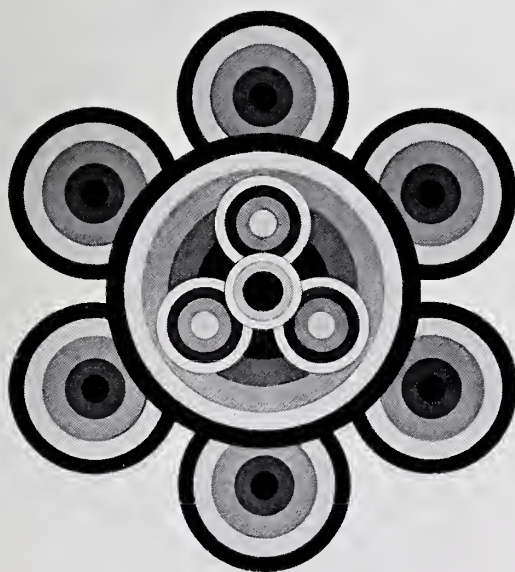
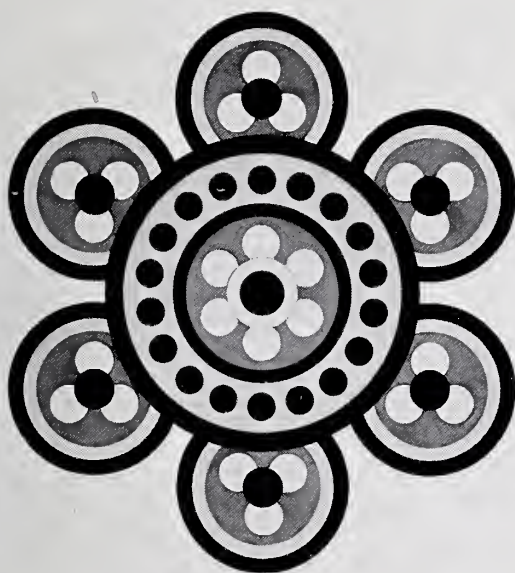


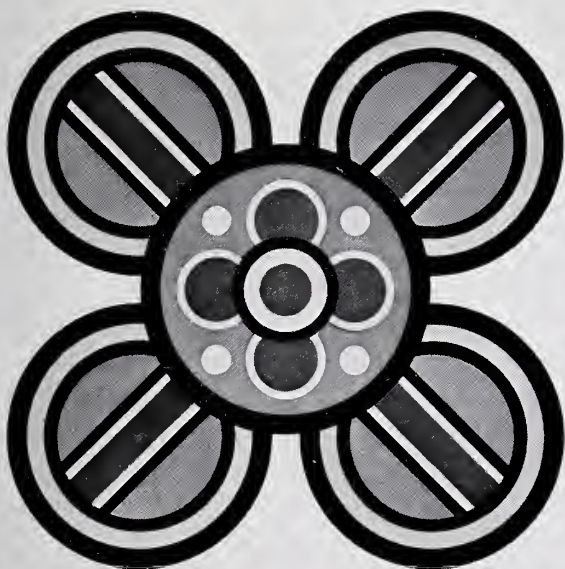
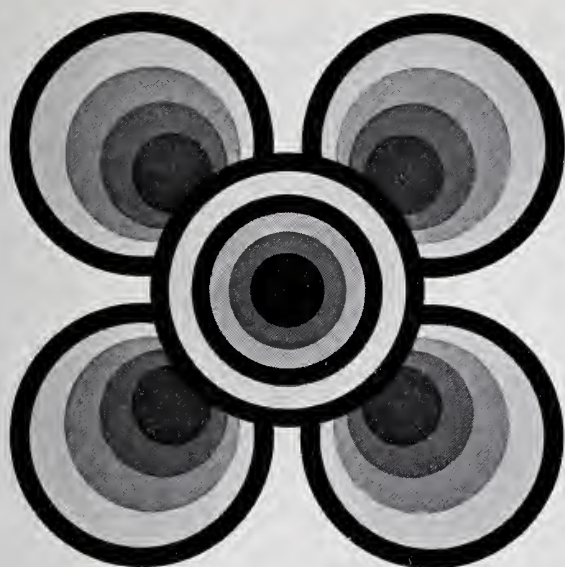


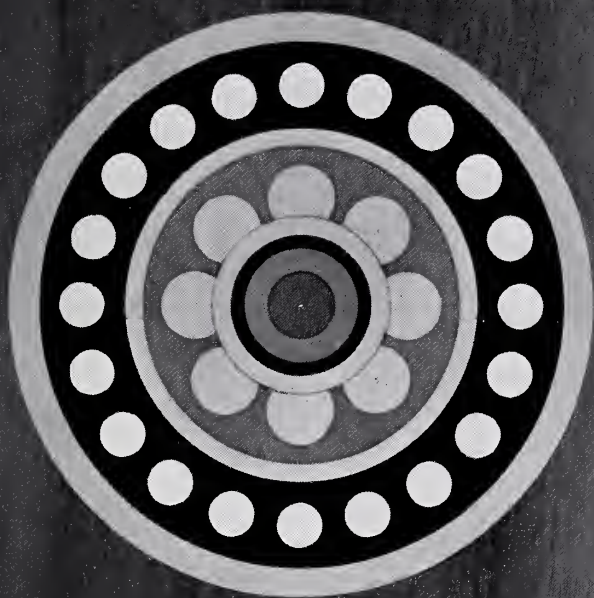


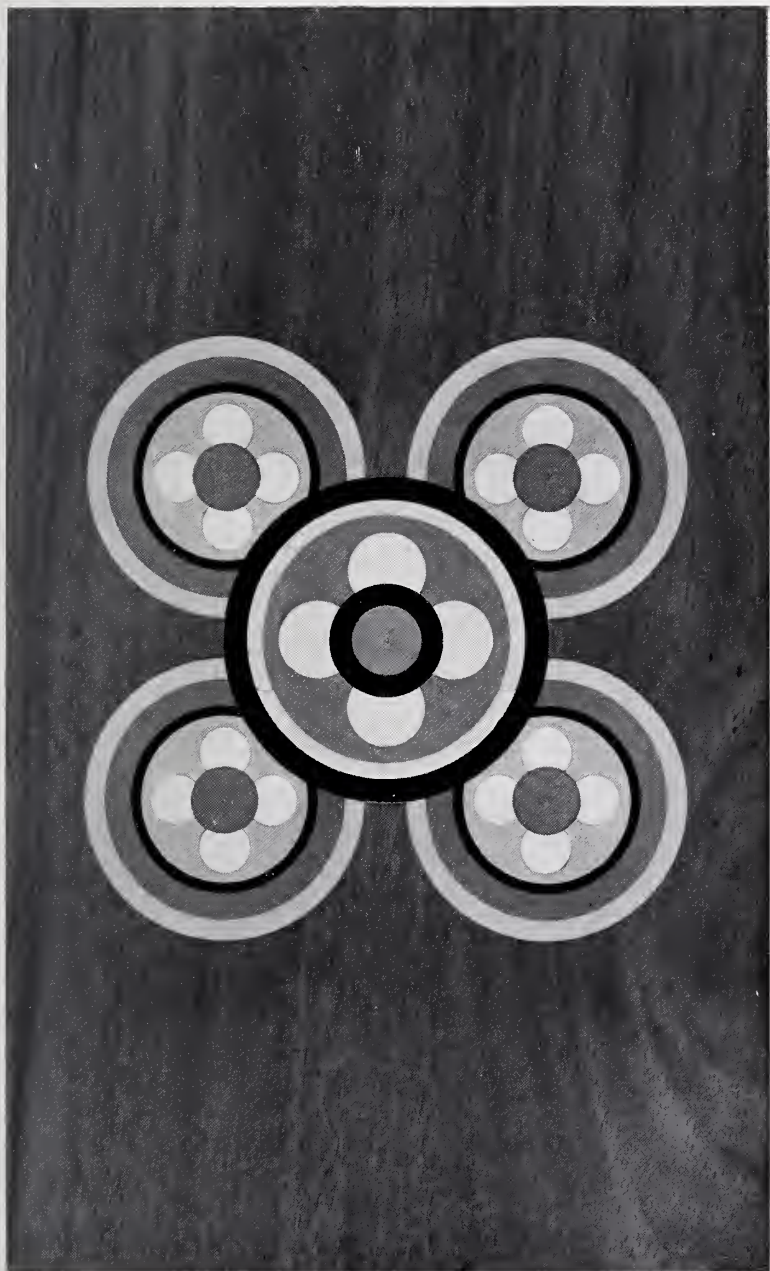


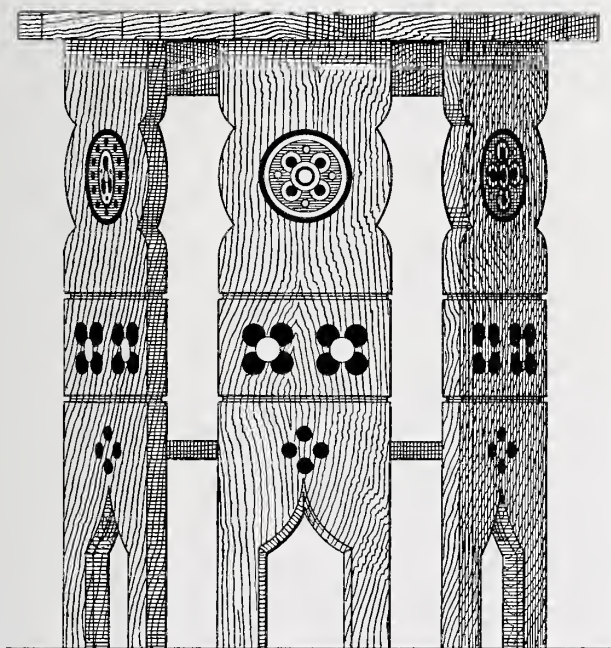
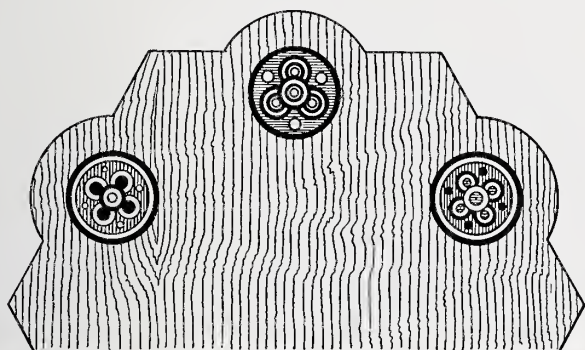


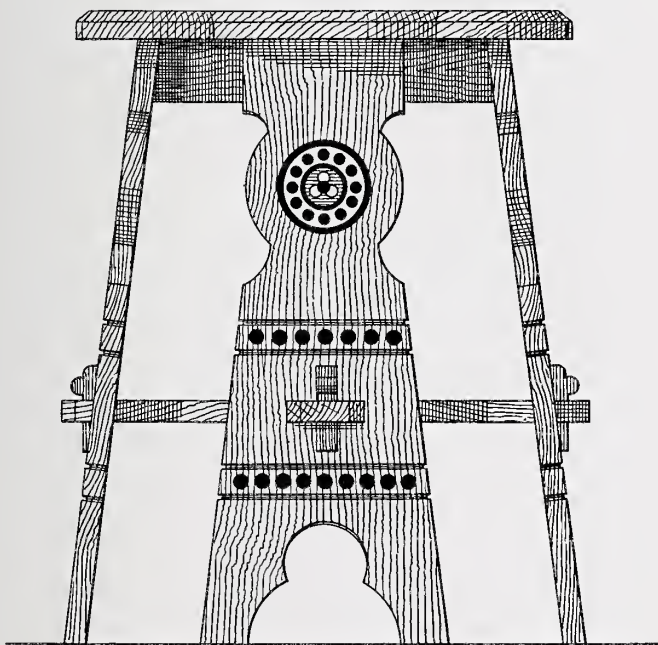
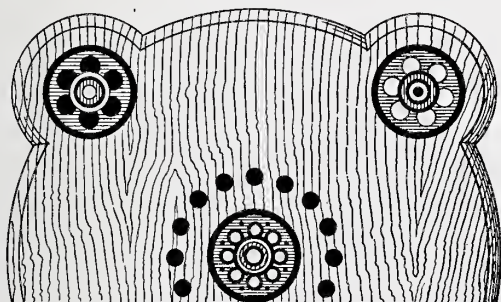


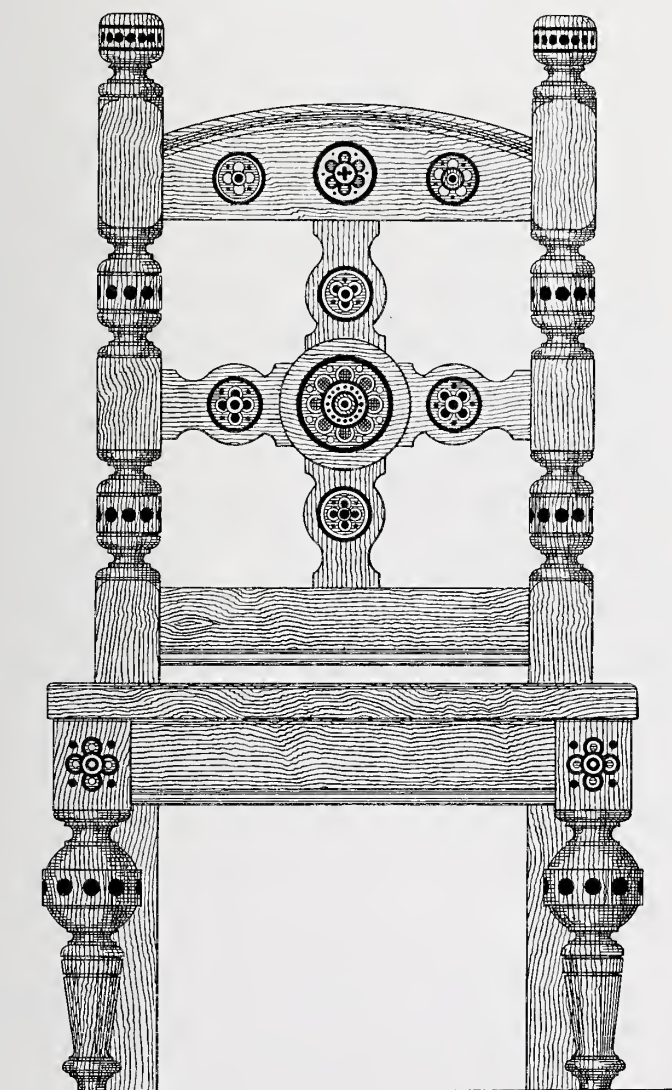


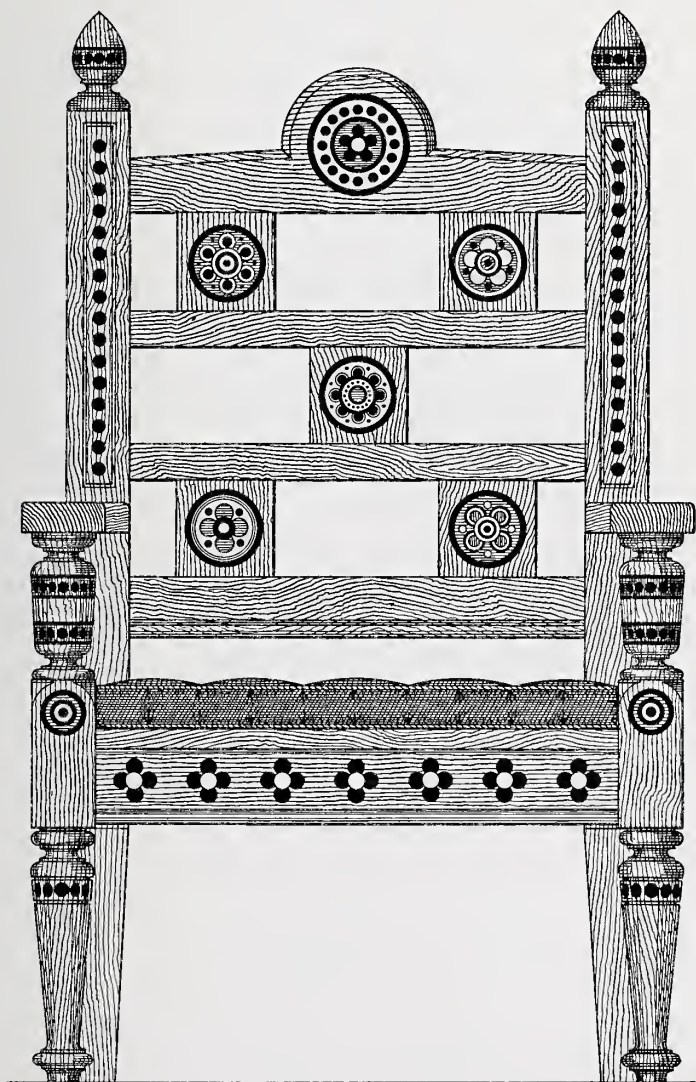


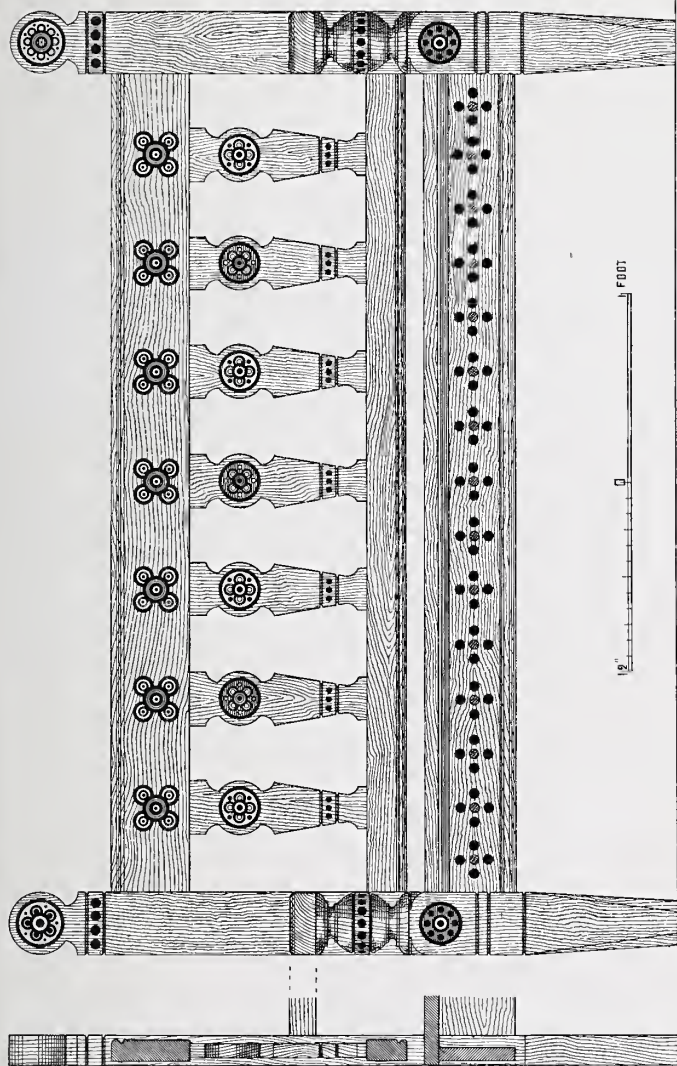












GETTY CENTER LIBRARY



3 3125 00139 4291

